

# Chemotherapy Protocols 2020

Current Protocols and "Targeted Therapies"

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**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Important comments:**

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## 4 Foreword

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### PREFACE to the 20<sup>th</sup> EDITION

We would like to express our thanks for the overwhelming positive response to the previous editions of this handy reference work.

Because of rapid advancements in the areas of hematology and oncology, every year a considerably large number of new therapy protocols are added to those in existence. In order to maintain the size of this book, special attention has been paid to those chemotherapy protocols that are frequently used in the daily routine.

Information on the number of cycles in the oncological protocols should be considered as orientation help; as far as hematological protocols are concerned, in view of even greater diversity in this field, information on cycles has been completely dispensed with.

The therapeutic protocol was developed in cooperation with Mrs. Petra Söllinger MSc (pharmacy sciences). The stability of the effective compounds in the published concentrations was verified.

This book cannot take the place of the major text books in oncology and it is stressed that the indication to therapy and the actual administration of oncologic agents shall remain in the hands of experienced hematologists and oncologists.

We shall also be very grateful to receive feedbacks on this edition in the future.

Wels and Zams, January 2020

Thomas Kuehr, MD, Vice head  
Josef Thaler, MD, Head of Department  
Ewald Woell, MD, Head of Department



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Foreword 5

## PREFACE to the 1<sup>st</sup> EDITION

The aim of this book is to present the most important and commonly used chemotherapy protocols in the treatment of solid tumors together with the mode of administration of the drugs and accompanying medication.

Special attention was directed towards designing the contents of this book in such a way as to meet the requirements of the Innsbruck University Clinics regarding preparation of cytostatic medications. In this context we would like to express our thanks to Dr. Elisabeth Semenitz (Hospital Pharmacy, Innsbruck University Clinics) for her valuable support in setting up guidelines for chemotherapy.

In this list, only those tumour entities are referred to which are treated in large numbers in our department.

Tumors that are treated very infrequently in our department, or those treated mostly by other clinics could not be addressed in this book. In the appendix, we address briefly the issues of anti-emetic therapy, measures for dealing with extravasation and current study protocols in our department. We plan to regularly issue newer editions and updates of this book; in this connection we request the reader for critical feedback and suggestions.

It should be clear that this book is not a substitute for detailed textbooks on oncology; we draw attention to the fact that decisions regarding indications and administration of drugs should be made only by experienced oncologists.

Innsbruck, April 2000

Ewald Woell, MD, Associate Professor, Senior Consultant

Thomas Kuehr, MD, Consultant

Josef Thaler, MD, Associate Professor, Senior Consultant

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## 6 Key to the symbols used

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<b>D</b>	<b>Drug</b>	<b>Do</b> mg/m <sup>2</sup>	<b>Di</b>	<b>V</b> ml	<b>T</b>	<b>R</b>
1-5	Cyclophosphamide	400	–	–	–	p.o.
1	Vincristine	1,4*	0.9% NaCl	100	10'	i.v.
1-5	Prednisone	100	–	–	–	p.o.

Cycle	1 <sup>st</sup> cycle														Following cycle	
Day of therapy	1	2	3	4	5										22	
Cyclophosphamide																
Vincristine																
Prednisone																

Chemotherapy should be administered in the given sequence.

The MEL Code is given beside the chemotherapy title.

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# A Hematology

# **Chapter 1**

## **High Grade NHL**





## 1. High Grade NHL

### 3. Hodgkin's

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### 3. Gastrointestinal

## 6. GIST

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## 17 Hematology

## 1 High Grade NHL

### 1.1 CHOP + RITUXIMAB

XC264 + XA090

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Cyclophosphamide	750	0.9% NaCl	500	1h	i.v.
1	Doxorubicin	50	0.9% NaCl	250	1h	i.v.
1	Vincristine	1.4*	0.9% NaCl	100	10'	i.v.
1-5	Prednisone	40	–	–	–	p.o.
1	Rituximab	375	0.9% NaCl	500	5h (3h)	i.v.

[illegible]

**HEMATOLOGY****1. High Grade NHL****ONCOLOGY****1. Lung Cancer****2. Breast Cancer****2. Low Grade NHL****3. Hodgkin's****3. Gastrointestinal****4. ENT****5. Soft Tissue****4. Multiple Myeloma****5. MDS****6. GIST****7. Melanoma****8. Merkel****6. CML****7. CMPD****9. Thyroid****10. Urogenital Tract****Repetition:** Day 22**Note:**

- **Rituximab:** The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.
- (\*) Vincristine max. 2 mg
- *Caution:* Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500$  mg/m<sup>2</sup>
- *Mesna:* Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide.

**Literature:**

Coiffier B. et al., N Engl J Med 346: 235ff, 2002

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## 19 Hematology

**1.2 COMP + RITUXIMAB** XC346 + XA090

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Cyclophosphamide	750	0.9% NaCl	500	1h	i.v.
1	Liposomal Doxorubicin citrate complex (Myocet®)	50	0.9% NaCl	100	1h	i.v.
1	Vincristine	1.4*	0.9% NaCl	100	10'	i.v.
1-5	Prednisone	40	–	–	–	p.o.
1	Rituximab	375	0.9% NaCl	500	5h (3h)	i.v.

Cycle	1										2									
Day of therapy	1	2	3	4	5														22	
Cyclophosphamide																				
Lipos. Doxorub.c.c.																				
Vincristine																				
Prednisone																				
Rituximab																				

Repetition: Day 22

Number of cycles: 8

**HEMATOLOGY****1. High Grade NHL****ONCOLOGY****1. Lung Cancer****2. Breast Cancer****2. Low Grade NHL****3. Hodgkin's****3. Gastrointestinal****4. ENT****5. Soft Tissue****4. Multiple Myeloma****5. MDS****6. GIST****7. Melanoma****8. Merkel****6. CML****7. CMPD****9. Thyroid****10. Urogenital Tract****High Grade NHL 20****Note:**

- **Rituximab:** The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.
- **Liposomal Doxorubicin citrate complex** should be dissolved at 0.4 - 1.2 mg/ml
- (\*) **Vincristine** max. 2 mg
- **Mesna:** Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide.

**Literature:**

Luminari S. et al., Ann Oncol 21: 1492ff, 2010

**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 21 Hematology

### 1.3 IMVP-16 XC656

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-5	Ifosfamide	1000	0.9% NaCl	500	1h	i.v.
3,10	Methotrexate	30	0.9% NaCl	100	15'	i.v.
1-3	Etoposide	100	0.9% NaCl	500	2h	i.v.

Cycle Day of therapy	1										2				
	1	2	3	4	5	10						22			
Ifosfamide															
Methotrexate															
Etoposide															

**Repetition:** Day 22**Note:**

- Etoposide should be dissolved in 1000 ml 0.9% NaCl if total dose is  $\geq 200$  mg
- *Mesna*: Dose is equal to 100% of the Ifosfamide dose, given as 20% of the Ifosfamide dose i.v. at hour 0, followed by 40% of the Ifosfamide dose given orally 2- and 6 hours after start of Ifosfamide.

**Literature:**

Cabanillas F. et al., Blood 60: 693ff, 1982

**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**High Grade NHL 22****1.4 DHAP XC408**

D	Drug	Do	Di	V ml	T	R
1	Cisplatin	100 mg/m <sup>2</sup>	0.9% NaCl	1000	24h	i.v.
2	Cytosine arabinoside	2x 2000 mg/m <sup>2</sup>	0.9% NaCl	2x 500	3h q12h	i.v.
1-4	Dexamethasone	40 mg (absolute)	–	–	–	p.o.

Cycle Day of therapy	1																2
	1	2	3	4													22 or 29
Cisplatin	■																■
Cytosine arabinos.	■	■															■
Dexamethasone	■	■	■	■													■

**Repetition:** Day 22 or 29**Note:**

- Cytosine arabinoside: Dose of 1000 mg/m<sup>2</sup> in patients >70 years of age
- Dexamethasone: Oral administration or as i.v. infusion over 15 min
- Cisplatin (only if GFR ≥60 ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:** Velasquez W. et al., Blood 71: 117ff, 1988

**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Table of  
Contents

## 23 Hematology

**1.5 Dose-adjusted EPOCH-24R XC492 + XA090**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Rituximab	375	0.9% NaCl	500	5h (3h)	i.v.
1-4	Etoposide*	50	0.9% NaCl	500	24h	i.v.
1-4	Doxorubicin*	10	0.9% NaCl	500	24h	i.v.
1-4	Vincristine*	0.4	0.9% NaCl	500	24h	i.v.
5	Cyclophosphamide	750	0.9% NaCl	500	2h	i.v.
1-5	Prednisone	120 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	1										2									
	1	2	3	4	5							22								
Rituximab																				
Etoposide																				
Doxorubicin																				
Vincristine																				
Cyclophosphamide																				
Prednisone																				

**Repetition:** Day 22**Number of cycles:** 6

**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**High Grade NHL 24****Note:**

- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg diphenhydramine is recommended.
- (\*) Etoposide, Doxorubicin and Vincristine are admixed together in 0.9% NaCl. The diluent volume will be based on the Etoposide dose for a 24 hour treatment:  
if  $\leq 150 \text{ mg/24h} = 500 \text{ ml}$ , if  $\geq 150 \text{ mg/24h} = 1000 \text{ ml}$
- (#) Prednisone  $120 \text{ mg/m}^2$  divided into two equal doses, administered in the morning and evening.
- G-CSF on day 6 through ANC  $> 5000 \text{ cells/}\mu\text{l}$  past the nadir (measurement of ANC and platelet nadir are based on twice weekly CBC only)
- Dose adjustments: Nadir ANC  $\geq 0.5 \text{ G/L}$ : 20% increase in Etoposide, Doxorubicin, Cyclophosphamide, Nadir ANC  $< 0.5 \text{ G/L}$ : same dose(s) as last cycle, Nadir ANC  $< 0.5 \text{ G/L}$  on at least three measurements or thrombocytes  $< 25 \text{ G/L}$ : 20% decrease in Etoposide, Doxorubicin, Cyclophosphamide.
- Dose adjustments above starting dose level (level 1) apply to Etoposide, Doxorubicin and Cyclophosphamide. Dose adjustments below starting dose level (level 1) apply to Cyclophosphamide only.
- Mesna: 20% of the Cyclophosphamide dose at the time of Cyclophosphamide administration (i.v.), 40% of the Cyclophosphamide dose 2h and 6h after Cyclophosphamide administration (p.o)
- Pneumocytis prophylaxis recommended

**Literature:** Wilson W. et al., Blood 99: 2685ff, 2002; Dunleavy K. et al., N Engl J Med 368: 1408ff, 2013 Dunleavy K. et al., Lancet Haematol 5: e609ff, 2018



**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Table of  
Contents**25 Hematology****1.6 RITUXIMAB / BENDAMUSTINE /  
POLATUZUMAB VEDOTIN XC153 + XA090**

D	Drug	Do	Di	V ml	T	R
1	Rituximab	375 mg/m <sup>2</sup>	0.9% NaCl	500	5h (3h)	i.v.
1,2	Bendamustine	90 mg/m <sup>2</sup>	0.9% NaCl	500	30'	i.v.
1	Polatuzumab Vedotin	1.8 mg/kg	0.9% NaCl	100	90'	i.v.

Cycle	1			2			3
Day of therapy	1	2	3	22			43
Rituximab							
Bendamustine							
Polatuz. Vedotin							

**Repetition: Number** Day 22  
**of cycles: 6 Note:**

- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg diphenhydramine is recommended.
- Polatuzumab Vedotin at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.

**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

- Polatuzumab Vedotin should be dissolved at 0.72 – 2.7 mg/ml
- Pneumocystis prophylaxis recommended

## Literature:

Sehn H. et al., J Clin Oncol 2019

(DOI: <https://doi.org/10.1200/JCO.19.00172>)

**HEMATOLOGY****1. High Grade NHL**

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 27 Hematology

**1.7 PIXANTRONE XC802**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	Pixantrone dimaleate	85*	0.9% NaCl	250	1h	i.v.

Cycle	1						
Day of therapy	1		8		15		29
Pixantrone dimal.							

**Repetition:** Day 29**Note:**

- (\*) Dose equivalent to 50 mg/m<sup>2</sup> of Pixantrone in its base form

**Literature:**

Pettengell R. et al., Lancet Oncol 13: 696ff, 2012

**HEMATOLOGY****1. High Grade NHL****ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

2. Low Grade NHL

3. Hodgkin's

3. Gastrointestinal

4. ENT

5. Soft Tissue

4. Multiple Myeloma

5. MDS

6. GIST

7. Melanoma

8. Merkel

6. CML

7. CMPD

9. Thyroid

10. Urogenital Tract

High Grade NHL 28

## 1.8 RITUXIMAB / GEMCITABINE / OXALIPLATIN XA090 + XC604

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Rituximab	375	0.9% NaCl	500	5h (3h)	i.v.
1	Gemcitabine	1000	0.9% NaCl	500	30'	i.v.
1	Oxaliplatin	100	5% Glucose	1000	2h	i.v.

Cycle	1				2
Day of therapy	1				22
Rituximab					
Gemcitabine					
Oxaliplatin					

**Repetition:**

Day 22

**Number of cycles:** 6**Note:**

- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.

**Literature:** Lopez A. et al., Eur J Haematol 80: 127ff, 2007  
El Gnaoui T. et al., Ann Oncol 18: 1363ff, 2007

## **Chapter 2**

### **Low Grade NHL**

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 30 Hematology

**2 Low Grade NHL****2.1 FLUDARABINE / CYCLOPHOSPHAMIDE /  
RITUXIMAB XC528 + XA090**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-3	Fludarabine	25	0.9% NaCl	250	30'	i.v.
1-3	Cyclophosphamide	250	0.9% NaCl	500	30'	i.v.
1	Rituximab	500*	0.9% NaCl	500	5h (3h)	i.v.

Cycle Day of therapy	1							2						
	1	2	3					29						
Fludarabine														
Cyclophosphamide														
Rituximab														

**Repetition:** Day 29**Note:**

- (\*) Rituximab at a dose of 375 mg/m<sup>2</sup> on day 0 of the first course, and 500 mg/m<sup>2</sup> on day 1 of the second to sixth courses.
- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 min. intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

- *Caution:* Tumor lysis syndrome and protracted T-cell depletion.
- *Mesna:* Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide

**Literature:**

Hallek M. et al., Lancet 376: 1164ff, 2010

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 32 Hematology

**2.2 IBRUTINIB + RITUXIMAB***XA149 + XA090*

D	Drug	Do	Di	V ml	T	R
1-*	Ibrutinib	420 mg	–	–	–	p.o.
1**	Rituximab <sup>#</sup>	500 mg/m <sup>2</sup>	0.9% NaCl	500	5h (3h)	i.v.

Cycle Day of therapy	1																												2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Ibrutinib																														
Rituximab																														

**Repetition:** \* Continuous administration; until progressive disease or intolerability  
# Day 29

**Number of cycles:** 7 (Rituximab)

**Note:**

- (\*\*) Rituximab: Start will be at cycle 2: day 1: 50 mg/m<sup>2</sup> i.v., day 2: 325 mg/m<sup>2</sup> i.v.; cycle 3-7: 500 mg/m<sup>2</sup> i.v. The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.

**Literature:**

Shanafelt T.D. et al., N Engl J Med 381: 432ff, 2019



**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 33

**2.3 BENDAMUSTINE / RITUXIMAB***XC153 + XA090*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Rituximab	375	0.9% NaCl	500	5h (3h)	i.v.
1,2	Bendamustine	90	0.9% NaCl	500	30'	i.v.

Cycle Day of therapy	1							2						
	1	2							29					
Rituximab														
Bendamustine														

**Repetition:** Day 29**Note:**

- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.

**Literature:**

Rummel M.J. et al., Lancet 381: 1203ff, 2013

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 34 Hematology

**2.4 RITUXIMAB** XA090

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Rituximab	375	0.9% NaCl	500	5h (3h)	i.v.

Cycle Day of therapy	1						2					
	1						8					
Rituximab												

**Repetition:** Day 8**Note:**

- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.
- A total of **4 cycles** is recommended.

**Literature:**

Maloney D. et al., Blood 90: 2188ff, 1997

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 35

**2.5 CHLORAMBUCIL / OBINUTUZUMAB XA076**

D	Drug	Do	Di	V ml	T	R
1,15	Chlorambucil	0.5 mg/kg	–	–	–	p.o.
1,8, 15	Obinutuzumab*	1000 mg	0.9% NaCl	500	**	i.v.

Cycle	1				2
Day of therapy	1	8	15		29
Chlorambucil					
Obinutuzumab					

**Repetition:** Day 29**Note:**

- (\*) Obinutuzumab only on day 1 from cycle 2 onward
- (\*\*) Obinutuzumab cycle 1
  - Day 1: 100 mg; administer at 25 mg/h over 4h.
  - Day 2: 900 mg; administer at 50 mg/h; the infusion rate can be escalated in increments of 50 mg/h every 30 to a maximum rate of 400 mg/h.
  - Day 8,15: Infusion can be started at a rate of 100 mg/h and increased by 100mg/h increments every 30 min. to a maximum of 400mg/h.
- Premedication with 30 mg Diphenhydramine recommended

**Literature:**

Goede V. et al., N Engl J Med 370: 1011ff, 2014

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 36 Hematology

**2.6 BENDAMUSTIN / OBINUTUZUMAB** **XA076**

D	Drug	Do	Di	V ml	T	R
1,2	Bendamustin	90 mg/m <sup>2</sup>	0.9% NaCl	500	30'	i.v.
1,8, 15	Obinutuzumab*	1000 mg	0.9% NaCl	500	#	i.v.

Cycle Day of therapy	1															2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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**Repetition:** Day 29**Note:**

- (\*) Obinutuzumab only on day 1 from cycle 2 onwards
- (#) Obinutuzumab cycle 1
  - Day 1: 100mg; administer at 25 mg/h over 4h
  - Day 2: 900mg; administer at 50 mg/h; the infusion rate can be escalated in increments of 50 mg/h every 30 to a maximum rate of 400 mg/h.
  - Day 8,15: Infusion can be started at a rate of 100 mg/h and increased by 100 mg/h increments every 30 min. to a maximum of 400 mg/h.
- Premedication with 30 mg Diphenhydramine recommended
- Obinutuzumab maintenance every 2 months over two years if no evidence of progressive disease is evident
- Obinotuzumab is approved also in combination with CVP or CHOP

**Literature:**

Marcus R. et al., N Engl J Med 377: 1331ff, 2017

Sehn L.H. et al., Lancet Oncol 17: 1081ff, 2016

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 37

**2.7 RITUXIMAB / LENALIDOMIDE XA090**

T	Wirkstoff	D	TL	V ml	Z	A
1*	Rituximab	375 mg/m <sup>2</sup>	0.9% NaCl	500	5h (3h)	i.v.
1-21	Lenalidomid	20 mg**	–	–	–	p.o.

Cycle	1																					2
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Rituximab																						
Lenalidomid																						

**Repetition:** Day 29**Number of cycles:** Rituximab: 5  
Lenalidomid: 12**Note:**

- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg diphenhydramine is recommended.
- (\*) Cycle 1: Rituximab administration d 8, 15, 22 (beginning 1 week after initiation of Lenalidomide)
- (\*\*) Lenalidomide dose 10 mg daily for creatinine clearance 30 to 59 ml/min

**Literature:**

Leonard J.P. et al.; J Clin Oncol 37: 1188ff, 2019

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 38 Hematology

**2.8 IBRUTINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Ibrutinib	420	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Ibrutinib																												

**Repetition:** \* Continuous administration**Note:**

- For the treatment of mantle-cell lymphoma the recommended dose is 560 mg/d (4 capsules once daily)
- Ibrutinib can also be administered in combination with Obinutuzumab (Moreno C. et al., Lancet Oncol 20: 43ff, 2019)

**Literature:**

Byrd J.C. et al., N Engl J Med 371: 213ff, 2014

Wang M.L. et al., N Engl J Med 369: 507ff, 2013

Woyach J.A. et al., N Engl J Med 379: 2517ff, 2018

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 39

**2.9 IDELALISIB / RITUXIMAB XA149 + XA090**

D	Drug	Do	Di	V ml	T	R
1-*	Idelalisib	300 mg	–	–	–	p.o.
1	Rituximab	375 <sup>#</sup> mg/m <sup>2</sup>	0.9 NaCl	500	5h (3h)	i.v.

Cycle 1-5:

Cycle	1	2	3
Day of therapy	1	15	29
Idelalisib	→		
Rituximab	→		

Cycle 6-8:

Cycle	6	7
Day of therapy	71	99
Idelalisib	→	
Rituximab	→	

**Repetition:**

\* Continuous administration

# Rituximab every 2 weeks for 4 doses and then every 4 weeks for 3 doses, for a total of 8 infusions

**Note:**

- (#) Rituximab 500 mg/m<sup>2</sup> from cycle 2 onwards
- Rituximab: The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.



## HEMATOLOGY

1. High Grade NHL

## 2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 40 Hematology

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- Premedication with 30 mg Diphenhydramine recommended

### Literature:

Furman R.R. et al., N Engl J Med 370: 997ff, 2014



**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 41

**2.10 VENETOCLAX / RITUXIMAB***XA149 + XA090*

D	Drug	Do	Di	V ml	T	R
1	Rituximab	375 mg/m <sup>2</sup>	0.9% NaCl	500	5 h (3 h)	i.v.
1-*	Venetoclax	400 mg <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	1														2														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Rituximab																													
Venetoclax																													

**Repetition:** \* Continuous administration for 2 years,  
Rituximab: Day 29

**Number of cycles:** 6 for Rituximab

**Note:**

- Rituximab: Start first administration at the end of the venetoclax ramp-up period  
Dose from cycle 2 onwards: 500 mg/m<sup>2</sup>  
The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400 mg/h.  
Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h.  
Premedication with 30 mg Diphenhydramine is recommended.

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 42 Hematology

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- (#) Venetoclax starting dose: 20 mg d1-7
- Dose increase schedule:

Week	daily dose
1	20 mg
2	50 mg
3	100 mg
4	200 mg
≥5	400 mg

- **Cave:** Venetoclax can cause rapid reduction in tumor, and thus poses a serious risk for tumor lysis syndrome (TLS) in the initial 5-week dose-titration phase. TLS can occur as early as 6 to 8 hours following the first dose of venetoclax and at each dose increase.

**Literature:**

Seymour J.F. et al., N Engl J Med 378: 1107ff, 2018

Roberts A.W. et al., N Engl J Med 374: 311ff, 2016

Stilgenbauer S. et al., Lancet Oncol 17: 768ff, 2016



## HEMATOLOGY

1. High Grade NHL

## 2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 43

### 2.11 BORTEZOMIB / RITUXIMAB – CYCLOPHOSPHAMIDE / DOXORUBICIN / PREDNISONE XA020 + XA090

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,4, 8,11	Bortezomib	1.3	–	–	–	s.c.
1	Rituximab	375	0.9% NaCl	500	5 h (3 h)	i.v.
1	Cyclophosphamide	750	0.9% NaCl	500	1 h	i.v.
1	Doxorubicin	50	0.9% NaCl	500	1 h	i.v.
1-5	Prednisone	100	–	–	–	p.o.

Cycle Day of therapy	1											2			
	1	2	3	4	5	8	11					22			
Bortezomib															
Rituximab															
Cyclophosphamide															
Doxorubicin															
Prednisone															

Repetition: Day 22

Number of cycles: 6-8

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 44 Hematology

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**Note:**

- **Rituximab:** The first initial rate for infusion is 50 mg/h; after the first 30 minutes, it can be escalated in 50 mg/h increments every 30 minutes, to a maximum of 400mg/h. Subsequent doses can be infused at an initial rate of 100 mg/h, and increased by 100 mg/h increments at 30 minute intervals, to a maximum of 400 mg/h. Premedication with 30 mg Diphenhydramine is recommended.
- **Caution:** Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500 \text{ mg/m}^2$
- **Mesna:** Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide
- Bortezomib concentration at 2.5 mg/ml

**Literature:**

Robak T. et al., N Engl J Med 372: 944ff, 2015

**HEMATOLOGY**

1. High Grade NHL

**2. Low Grade NHL**

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Low Grade NHL 45

**2.12 LENALIDOMIDE** XA149

D	Drug	Do mg	Di	V ml	T	R
1-21	Lenalidomide	25	–	–	–	p.o.

Cycle Day of therapy	1																					2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Lenalidomide																						

**Repetition:** Day 29**Note:**

- Thromboprophylaxis is recommended

**Literature:**

Trneny M. et al., Lancet Oncol 17: 319ff, 2016

## **Chapter 3**

# **Hodgkin's Disease**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

**3. Hodgkin's**

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 47 Hematology

**3 Hodgkin's Disease****3.1 ABVD** XC024

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,15	Doxorubicin	25	0.9% NaCl	250	1h	i.v.
1,15	Bleomycin	10	–	–	Bolus	i.v.
1,15	Vinblastine	6	0.9% NaCl	100	10'	i.v.
1,15	Dacarbazine	375	0.9% NaCl	500	30'	i.v.

Cycle Day of therapy	1														2													
	1													15														29
Doxorubicin																												
Bleomycin																												
Vinblastine																												
Dacarbazine																												

**Repetition:** Day 29**Note:**

- **Caution:** Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500 \text{ mg/m}^2$
- Dacarbazine: light-resistant infusion set mandatory

**Literature:**

Santoro A. et al., Cancer Chemother Pharmacol 2: 101ff, 1979





**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

**3. Hodgkin's**

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 49 Hematology

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**Repetition:** Day 22**Note:**

- *Caution:* Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500 \text{ mg/m}^2$
- Etoposide should be dissolved in 1000 ml 0.9% NaCl if total dose is  $\geq 200 \text{ mg}$
- (\*) Vincristine max. 2 mg
- *Mesna:* Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide
- G-CSF obligatory on Day 8 until leukocytes  $>1000/\text{mm}^3$  is achieved and the nadir is crossed. Continuation of therapy only 48 h after discontinuation of G-CSF  
Dose: 300  $\mu\text{g/d}$  s.c. if bodyweight  $<75 \text{ kg}$ ; 450  $\mu\text{g/ kg}$  s.c. if bodyweight  $>75 \text{ kg}$

**Literature:**

Diehl V. et al., N Engl J Med 348: 2386ff, 2003



<b>HEMATOLOGY</b>	2. Low Grade NHL	4. Multiple Myeloma	6. CML
1. High Grade NHL	<b>3. Hodgkin's</b>	5. MDS	7. CMPD
<b>ONCOLOGY</b>	3. Gastrointestinal	6. GIST	9. Thyroid
1. Lung Cancer	4. ENT	7. Melanoma	10. Urogenital Tract
2. Breast Cancer	5. Soft Tissue	8. Merkel	

### 3.3 A + AVD XA064

D	Drug	Do	Di	V ml	T	R
1,15	Doxorubicin	25 mg/m <sup>2</sup>	0.9% NaCl	250	1h	i.v.
1,15	Vinblastine	6 mg/m <sup>2</sup>	0.9% NaCl	100	10'	i.v.
1,15	Dacarbazine	375 mg/m <sup>2</sup>	0.9% NaCl	500	30'	i.v.
1,15	Brentuximab vedotin	1.2 mg/kg	0.9% NaCl	250	30'	i.v.

Cycle	1			2
Day of therapy	1	15		29
Doxorubicin				
Vinblastine				
Dacarbazine				
Brentuximab ved.				

Repetition: Day 29

Number of cycles: 6

**Note:**

- Brentuximab should be dissolved at 0.4 - 1.2 mg/ml
- Brentuximab will be started within approximately 1 hour after completion of AVD.
- *Caution:* Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500 \text{ mg/m}^2$
- Dacarbazine: light-resistant infusion set mandatory

**Literature:** Connors J.M. et al., N Engl J Med 378: 331ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

**3. Hodgkin's**

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 51 Hematology

**3.4 BRENTUXIMAB** *XA064*

D	Drug	Do mg/kg	Di	V ml	T	R
1	Brentuximab vedotin	1.8	0.9% NaCl	250	30'	i.v.

Cycle	1										2
Day of therapy	1										22
Brentuximab ved.											

**Repetition:** Day 22**Number of cycles:** Up to 8**Note:**

- Brentuximab should be dissolved at 0.4 - 1.2 mg/ml

**Literature:**

Jounes A. et al., J Clin Oncol 30: 2183ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

**3. Hodgkin's**

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Hodgkin's Disease 52

**3.5 NIVOLUMAB XA085**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	3	0.9% NaCl	100	60'	i.v.

Cycle	1										2									
Day of therapy	1														15					
Nivolumab																				

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- Nivolumab should be dissolved at 1-10 mg/ml
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480 mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)

**Literature:**

Younes A. et al., Lancet Oncol 17: 1283ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

**3. Hodgkin's**

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 53 Hematology

**3.6 PEMBROLIZUMAB** XA081

D	Drug	Do mg	Di	V ml	T	R
1	Pembrolizumab	200	0.9% NaCl	100	60'	i.v.

Cycle	1										2
Day of therapy	1										22
Pembrolizumab											

**Repetition:** Day 22**Number of cycles:** For a maximum of 24 months or until progressive disease or intolerability**Note:**

- Pembrolizumab should be dissolved at 1-10 mg/ml

**Literature:**

Chen R. et al., J Clin Oncol 35: 2125ff, 2017

## **Chapter 4**

# **Multiple Myeloma**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Multiple Myeloma 55

## 4 Multiple Myeloma

### 4.1 DARATUMUMAB / BORTEZOMIB / MELPHALAN / PREDNISONE XA071 + XA020

D	Drug	Do	Di	V ml	T	R
1*	Daratumumab	16 mg/kg	0.9% NaCl	500	7h (3h)	i.v.
1,8, 22, 29#	Bortezomib	1,3 mg/m <sup>2</sup>	–	–	–	s.c.
1-4	Melphalan	9 mg/m <sup>2</sup>	–	–	–	p.o.
1-4	Prednisone	60 mg/m <sup>2</sup>	–	–	–	p.o.

Cycle 1:

Cycle	1											
Day of therapy	1	2	3	4	8	11	15	22	25	29	32	36
Daratumumab*												
Bortezomib												
Melphalan												
Prednisone												

Cycle 2 - 9:

Cycle	2				3				4			
Day of therapy	43	46	50		64	71			85			
Daratumumab												
Bortezomib												
Melphalan												
Prednisone												

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**56 Hematology****Repetition:** Bortezomib/Melphalan/Prednisone: d 43

(#) Bortezomib:

Cycle 1: twice weekly on weeks  
1,2,4,5 (q d43)Cycle 2-9: once weekly on weeks  
1,2,4,5 (q d43)

(\*) Daratumumab:

Cycle 1: d1,8,15,22,29,36 (q43);

Cycle 2-9: d1 (q22);

Cycle 10 onwards: d1 (q29)

**Number of cycles:** Up to 9**Note:**

- Daratumumab: Dilution volume during the 1st infusion: 1000 ml, from the 2nd infusion onwards: 500 ml. The initial rate for the first and second infusion is 50 ml/h; after the first 60 minutes it can be escalated in 50 ml/h increments every 60 minutes, to a maximum of 200 ml/h. Subsequent doses can be infused at an initial rate of 100 ml/h, and increased by 50 ml/h increments at 60 minutes intervals, to a maximum of 200ml/h.
- *Premedication:* 30 mg Diphenhydramine i.v., 12 mg Dexamethasone i.v.; 1000 mg Paracetamol p.o.
- *Postmedication:* 8 mg Dexamethasone (Day 2,3) following the first four infusions. In case of no major IRRs, the post-infusion medication may be discontinued.
- Bortezomib concentration at 2.5 mg/ml

**Literature:**

Mateos M.-V. et al., N Engl J Med 378: 518ff, 2018





## 10. Urogenital Tract

Cycle Day of therapy	7				8
	169-175	176-182	183-189	190	197
Daratumumab					
Lenalidomide					
Dexamethasone					

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 58 Hematology

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**Repetition:** Lenalidomide, Dexamethasone: d 29

- \* Daratumumab:  
cycle 1-2: d1,8,15,22 (q29);  
cycle 3-6: d1 (q15);  
cycle 7 onwards: d1 (q29)

**Note:**

- (#) Daratumumab: Dilution volume during the 1<sup>st</sup> infusion: 1000 ml, from the 2<sup>nd</sup> infusion onwards: 500 ml.  
The initial rate for the first and second infusion is 50 ml/h; after the first 60 minutes it can be escalated in 50 ml/h increments every 60 minutes, to a maximum of 200 ml/h. Subsequent doses can be infused at an initial rate of 100 ml/h, and increased by 50 ml/h increments at 60 minutes intervals, to a maximum of 200 ml/h.  
*Premedication:* 30 mg Diphenhydramine i.v., 12 mg Dexamethasone i.v.; 1000 mg Paracetamol p.o.  
*Postmedication:* 8 mg Dexamethasone (Day 2,3) following the first four infusions. In case of no major IRRs, the post-infusion medication may be discontinued.
- Thromboprophylaxis is recommended

**Literature:**

Dimopoulos M.A. et al., N Engl J Med 375: 1319ff, 2016  
Facon et al., N Engl J Med 380: 2104ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Multiple Myeloma 59

**4.3 BORTEZOMIB / LENALIDOMIDE /  
DEXAMETHASONE XA020**

D	Drug	Do	Di	V ml	T	R
1,4, 8,11	Bortezomib	1.3 mg/m <sup>2</sup>	–	–	–	s.c.
1-14	Lenalidomide	25 mg	–	–	–	p.o.
1,2, 4,5, 8,9 11, 12	Dexamethasone	20 mg	–	–	–	p.o.

Cycle Day of therapy	1														2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22	
Bortezomib	■			■				■			■					■
Lenalidomide	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Dexamethasone	■	■		■				■			■				■	■

**Repetition:** Day 22**Number of cycles:** 8**Note:**

- From cycle 9 onwards: Lenalidomide 25 mg day 1-21 and Dexamethasone 40 mg day 1,8,15,22; Repetition: day 29
- Bortezomib concentration at 2.5 mg/ml
- Thromboprophylaxis is recommended

**Literature:**

Durie B. et al., Lancet 389: 519ff, 2017



<b>HEMATOLOGY</b>	2. Low Grade NHL	<b>4. Multiple Myeloma</b>	6. CML
1. High Grade NHL	3. Hodgkin's	5. MDS	7. CMPD
<b>ONCOLOGY</b>	3. Gastrointestinal	6. GIST	9. Thyroid
1. Lung Cancer	4. ENT	7. Melanoma	10. Urogenital Tract
2. Breast Cancer	5. Soft Tissue	8. Merkel	

## 60 Hematology

#### 4.4 BORTEZOMIB / LENALIDOMIDE / DEXAMETHASONE – VRD lite XA020

D	Drug	Do	Di	V ml	T	R
1,8, 15, 22	Bortezomib**	1.3 mg/m <sup>2</sup>	–	–	–	s.c.
1,2, 8,9, 15, 16, 22, 23	Dexamethasone*	20 mg	–	–	–	p.o.
1-21	Lenalidomide	15 mg	–	–	–	p.o.

Cycle 1 - 9, Induction:

Cycle Day of therapy	1																							2			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23			36	
Bortezomib	■							■							■								■				■
Dexamethasone*	■	■						■	■						■	■							■	■			■
Lenalidomide	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■					■

Cycle 10 - 15, Consolidation:

[illegible]

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Multiple Myeloma 61**

**Repetition:** Induction (cycles 1-9): Day 35;  
Consolidation (cycles 10-15)\*\*: Day 28

**Note:**

- Dexamethasone: For patients >75 years of age on days 1, 8, 15, 22
- (\*\*): Consolidation: Bortezomib 1.3 mg/m<sup>2</sup> d1,15, Lenalidomide 15 mg d1-21
- From cycle 16 onwards: Lenalidomide maintenance therapy at the discretion of the treating physician
- Bortezomib concentration at 2.5 mg/ml
- Thromboprophylaxis is recommended

**Literature:**

O'Donnell E.K. et al., Br. J. Haematol 182: 222ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 62 Hematology

**4.5 LENALIDOMIDE / DEXAMETHASONE***XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Lenalidomide	25	–	–	–	p.o.
1,8, 15, 22	Dexamethasone	40	–	–	–	p.o.

Cycle	1																						2	
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	29	
Lenalidomide																								
Dexamethasone																								

**Repetition:** Day 29**Note:**

- Thromboprophylaxis is recommended

**Literature:**

Rajkumar S.V., Lancet Oncol 11: 29ff, 2010

Benboubker L. et al., N Engl J Med 371: 906ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Multiple Myeloma 63

**4.6 BORTEZOMIB / CYCLOPHOSPHAMIDE /  
DEXAMETHASONE XA020**

D	Drug	Do	Di	V ml	T	R
1,4, 8,11	Bortezomib	1.3 mg/m <sup>2</sup>	–	–	–	s.c.
1,8, 15	Cyclophosphamide	500 mg/m <sup>2</sup>	0.9% NaCl	500	1h	i.v.
1,8 15	Dexamethasone	40 mg	–	–	–	p.o.

Cycle Day of therapy	1															2				
	1	4				8	11				15					22				
Bortezomib	■	■				■	■									■		■		
Cyclophosphamide											■					■				
Dexamethasone	■					■					■					■				

**Repetition:** Day 22**Note:**

- Bortezomib concentration at 2.5 mg/ml
- *Mesna*: Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide

**Literature:**

Kumar S. et al., Blood 119: 4375ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 64 Hematology

**4.7 DARATUMUMAB / BORTEZOMIB /  
DEXAMETHASONE** XA071 + XA020

D	Drug	Do	Di	V ml	T	R
1,8, 15*	Daratumumab	16 mg/kg	0.9% NaCl	500	7h (3h)	i.v.
1,4, 8,11	Bortezomib	1.3 mg/m <sup>2</sup>	–	–	–	s.c.
1,2, 4,5, 8,9 11, 12	Dexamethasone	20 mg	–	–	–	p.o.

Cycle Day of therapy	1															2				
	1	2	4	5		8	9	11	12		15					22				
Daratumumab	■					■					■					■				
Bortezomib	■					■					■					■				
Dexamethasone	■	■				■	■				■	■				■	■			

**Repetition:** Bortezomib/Dexamethasone: Day 22

(\*) Daratumumab:

Cycle 1-3: d1,8,15 (q22)

Cycle 4-8: d1 (q29)

**Note:**

- Dilution volume during the 1st infusion: 1000 ml, from the 2<sup>nd</sup> infusion onwards: 500 ml.
- Daratumumab: The initial rate for the first and second infusion is 50ml/h; after the first 60 minutes it can be escalated in 50ml/h increments every 60 minutes, to a maximum of 200 ml/h. Subsequent doses can be infused at an initial rate of 100ml/h, and increased by 50 ml/h increments at 60 minutes intervals, to a maximum of 200 ml/h.



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Multiple Myeloma 65**

- *Premedication:* 30 mg Diphenhydramine i.v., 12 mg Dexamethasone i.v.; 1000 mg Paracetamol p.o.
- *Postmedication:* 8 mg Dexamethasone (Day 2,3) following the first four infusions. In case of no major IRRs, the post-infusion medication may be discontinued.
- Bortezomb concentration at 2.5 mg/ml
- Thromboprophylaxis is recommended.

**Literature:**

Palumbo A. et al., N Engl J Med 375: 754ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 66 Hematology

**4.8 CARFILZOMIB / LENALIDOMIDE / DEXAMETHASONE XA022**

D	Drug	Do	Di	V ml	T	R
1,2, 8,9, 15, 16	Carfilzomib	20* mg/m <sup>2</sup>	5% Glucose	100	30'	i.v.
1-21	Lenalidomide	25 mg	–	–	–	p.o.
1,8, 15, 22	Dexamethasone	40 mg	–	–	–	p.o.

Cycle Day of therapy	1																					2		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	29	
Carfilzomib	■	■						■	■						■	■								■
Lenalidomide	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Dexamethasone	■							■							■							■	■	■

**Repetition:** Day 29**Note:**

- (\*) Carfilzomib is administered at a starting dose of 20 mg/m<sup>2</sup> in cycle 1 on days 1 and 2. If tolerated, the dose should be increased to 27 mg/m<sup>2</sup> on day 8 of cycle 1.
- Adequate hydration is required before dose administration in cycle 1, especially in patients at high risk of tumor lysis syndrome or renal toxicity.
- Thromboprophylaxis is recommended

**Literature:**

Stewart A.K. et al., N Engl J Med 372: 142ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Multiple Myeloma 67

**4.9 IXAZOMIB / LENALIDOMIDE /  
DEXAMETHASONE XA149**

T	Wirkstoff	D mg	TL	V ml	Z	A
1,8, 15	Ixazomib	4	–	–	–	p.o.
1-21	Lenalidomide	25	–	–	–	p.o.
1,8, 15, 22	Dexamethasone	40	–	–	–	p.o.

Cycle Day of therapy	1																						2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	29	
Ixazomib																								
Lenalidomide																								
Dexamethasone																								

**Repetition:** Day 29**Note:**

- Thromboprophylaxis is recommended

**Literature:**

Moreau P. et al., N Engl J Med 374: 1621ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 68 Hematology

**4.10 ELOTUZUMAB / LENALIDOMIDE /  
DEXAMETHASONE XA972**

D	Drug	Do	Di	V ml	T	R
1,8, 15, 22	Dexamethasone	36 mg <sup>#</sup>	–	–	–	p.o.
1-21	Lenalidomide	25 mg	–	–	–	p.o.
1,8, 15, 22*	Elotuzumab	10 mg/kg	0.9% NaCl	230	–	i.v.

Cycle Day of therapy	1																						2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	29
Dexamethasone																							
Lenalidomide																							
Elotuzumab																							

**Repetition:** Day 29**Note:**

- (\*) From cycle 3 onwards: Elotuzumab d1, 15
- (#) Dexamethasone: 28 mg p.o. 3-24h before Elotuzumab, 8 mg i.v. 45-90 minutes prior to Elotuzumab
- From cycle 3 onwards: 40 mg p.o. d8, 22; 28 mg + 8 mg d1,15
- Elotuzumab: The administration in cycle 1, dose 1 must be initiated at an infusion rate of 0.5 ml/min. If the infusion is well tolerated the infusion rate may be increased to 1 ml/min after 30-60 minutes. It can be further escalated to 2 ml/min. The administration in cycle 1, dose 2 may be initiated at an infusion rate of 3 ml/min. If the infusion is well tolerated the infusion rate may be increased to 4 ml/min after 30 minutes.



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

## 4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Multiple Myeloma 69

The administration in cycle 1, dose 3 and 4 may be initiated at an infusion rate of 5 ml/min. The maximum infusion rate should not exceed 5 ml/min.

- Premedication: 30 mg Diphenhydramine i.v., Famotidine 20 mg p.o.; 1000 mg Paracetamol p.o.

### Literature:

Lonial S. et al., N Engl J Med 373: 621ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 70 Hematology

**4.11 CARFILZOMIB / DEXAMETHASONE**  
**XA022**

D	Drug	Do	Di	V ml	T	R
1, 8, 15	Carfilzomib	70* mg/m <sup>2</sup>	5% Glucose	100	30'	i.v.
1, 8, 15, 22 <sup>#</sup>	Dexamethasone	40 mg	–	–	–	p.o.

Cycle Day of therapy	1				2
	1	8	15	22	29
Carfilzomib	█	█	█		█
Dexamethasone	█	█	█	█	█

**Repetition:** Day 29**Note:**

- (\*) Carfilzomib cycle 1, day 1: 20 mg/m<sup>2</sup>; thereafter 70 mg/m<sup>2</sup>.
- (#) Dexamethasone at 40 mg on days 1,8,15 (all cycles) and 22 (cycles 1-9 only)
- Adequate hydration is required before dose administration in cycle 1, especially in patients at high risk of tumor lysis syndrome or renal toxicity.

**Literature:**

Moreau P. et al., Lancet Oncol 19: 953ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**4.12 POMALIDOMIDE / DEXAMETHASONE**  
*XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Pomalidomide	4	–	–	–	p.o.
1,8, 15, 22	Dexamethasone	40	–	–	–	p.o.

Cycle	1																						2		
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	29		
Pomalidomide																									
Dexamethasone																									

**Repetition:** Day 29**Note:**

- Thromboprophylaxis is recommended

**Literature:**

San-Miguel J.F. et al., Lancet Oncol 14: 1055ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 72 Hematology

**4.13 POMALIDOMIDE / BORTEZOMIB /  
DEXAMETHASONE XA020**

D	Drug	Do mg	Di	V ml	T	R
1,4, 8, 11*	Bortezomib	1.3 mg/m <sup>2</sup>	–	–	–	s.c.
1,2, 4,5, 8,9, 11, 12	Dexamethasone	20 mg	–	–	–	p.o.
1-14	Pomalidomide	4 mg	–	–	–	p.o.

Cycle Day of therapy	1														2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22	
Bortezomib	■			■				■			■				■	
Dexamethasone	■	■			■			■	■		■	■			■	■
Pomalidomide	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

**Repetition:** Day 22**Note:**

- (\*) Bortezomib, Dexamethasone: from cycle 9 onwards: d1,8 (q22)
- Bortezomib concentration at 2.5 mg/ml
- Thromboprophylaxis is recommended

**Literature:**

Richardson et al., Lancet Oncol. 20: 781ff; 2019



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Multiple Myeloma 73

**4.14 PEGYLATED LIPOSOMAL DOXORUBICIN /  
BORTEZOMIB XC452 + XA020**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,4, 8,11	Bortezomib	1.3	–	–	–	s.c.
4	Pegylated liposomal Doxorubicin (Caelyx®)	30	5% Glucose	250	1h	i.v.

Cycle	1										2
Day of therapy	1	4	8	11							29
Bortezomib	■	■	■	■							■
Peg. lip. Doxorub.											

**Repetition:** Day 29**Number of cycles:** 8**Note:**

- Pegylated liposomal Doxorubicin should be dissolved in 500 ml of 5% Glucose in case the total dose exceeds 90 mg.
- Bortezomib concentration at 2.5 mg/ml

**Literature:**

Orlowski R.Z. et al., J Clin Oncol 25: 3892ff, 2007

Moreau P. et al., Lancet Oncol 12: 431ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

**4. Multiple Myeloma**

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**74 Hematology****4.15 DARATUMUMAB XA071**

D	Drug	Do mg/kg	Di	V ml	T	R
1*	Daratumumab	16	0.9% NaCl	500	7h (3)	i.v.

Week 1 - 8: Day 8	1	2	3	4	5
Day of therapy	1	8	15	22	29
Daratumumab					

Week 9 - 24: Day 15	9	10	11	12	13
Day of therapy	57		71		85
Daratumumab					

Week 25 onw.: Day 29	25	26	27	28	29
Day of therapy	169				197
Daratumumab					

**Repetition:**

\* week 1 - 8: d8

\* week 9-24: d15

\* week 25 onwards: d29

**Note:**

- Dilution volume during the 1<sup>st</sup> infusion: 1000 ml, from the 2<sup>nd</sup> infusion onwards: 500 ml.
- Daratumumab: The initial rate for the first and second infusion is 50ml/h; after the first 60 minutes it can be escalated in 50ml/h increments every 60 minutes, to a maximum of 200 ml/h. Subsequent doses can be infused at an initial rate of 100ml/h, and increased by 50 ml/h increments at 60 minutes intervals, to a maximum of 200ml/h.
- *Premedication:* 30 mg Diphenhydramine i.v., 12 mg Dexamethasone i.v.; 1000 mg Paracetamol p.o.
- *Postmedication:* 8 mg Dexamethasone (d2,3) following the first four infusions. In case of no major IRRs, the post-infusion medication may be discontinued.

**Literature:** Lonial S. et al., Lancet 387: 1551ff, 2016

## **Chapter 5**

# **Myelodysplastic Syndrome**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

**5. MDS**

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 5 Myelodysplastic Syndrome

### 5.1 AZACITIDINE XA025

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-7	Azacitidine	75	–	–	–	s.c.

Cycle Day of therapy	1							2						
	1	2	3	4	5	6	7							29
Azacitidine														

**Repetition:** Day 29**Literature:**

Silverman L.R. et al., J Clin Oncol 20: 2429ff, 2002

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

**5. MDS**

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 77 Hematology

**5.2 LENALIDOMIDE** XA149

D	Drug	Do mg	Di	V ml	T	R
1-21	Lenalidomide	10	–	–	–	p.o.

Cycle Day of therapy	1																					2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Lenalidomide																						

**Repetition:** Day 29**Note:**

- For the treatment of patients with transfusion-dependent anemia due to low- or intermediate-1-risk myelodysplastic syndromes associated with an isolated deletion 5q cytogenetic abnormality.
- Thromboprophylaxis is recommended

**Literature:**

Fenaux P. et al., Blood 118: 3765ff, 2011

## **Chapter 6**

# **Chronic Myelogenous Leukaemia**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

**6. CML**

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 6 Chronic Myelogenous Leukaemia

### 6.1 HYDROXYUREA *XA149*

D	Drug	Do mg/kg	Di	V ml	T	R
1-*	Hydroxyurea	40	–	–	–	p.o.

Cycle	continuous administration																											
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Hydroxyurea																												

**Repetition:** \* Continuous administration**Note:**

- Dose adjustment according to response

**Literature:**

Hehlmann R. et al., Blood 84: 4064ff, 1994

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

**6. CML**

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 80 Hematology

**6.2 IMATINIB (Chronic phase) XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Imatinib	400	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Imatinib																												

**Repetition:** \* Continuous administration**Note:**

- In accelerated phase CML, the initial dose is 600 mg daily.

**Literature:**

Druker B., N Engl J Med 344: 1031ff, 2001

O'Brien S. et al., N Engl J Med 348: 994ff, 2003



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

**6. CML**

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Chronic Myelogenous Leukaemia 81

**6.3 DASATINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Dasatinib	100	–	–	–	p.o.

Cycle	continuous administration																											
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Dasatinib																												

**Repetition:** \* Continuous administration**Note:**

- The total dose of 100 mg should be administered at once

**Literature:**

Shah N.P. et al., J Clin Oncol 26: 3204ff, 2008

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

**6. CML**

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 82 Hematology

**6.4 NILOTINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Nilotinib	600	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Nilotinib																												

**Repetition:** \* Continuous administration**Note:**

- Nilotinib 600 mg divided into 2 equal doses, morning and evening

**Literature:**

Saglio G. et al., N Engl J Med 362: 2251ff, 2010

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

**6. CML**

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Chronic Myelogenous Leukaemia 83

**6.5 BOSUTINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Bosutinib	500	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Bosutinib																												

**Repetition:** \* Continuous administration**Literature:**

Cortes J.E. et al., J Clin Oncol 30: 3486ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

**6. CML**

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 84 Hematology

**6.6 PONATINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Ponatinib	45	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Ponatinib																												

**Repetition:** \* Continuous administration**Literature:**

Cortes J.E. et al., N Engl J Med 369: 1783ff, 2013

## **Chapter 7**

# **Other Chronic Myeloproliferative Diseases**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

**7. CMPD****ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 7 Other Chronic Myeloproliferative Diseases

### 7.1 HYDROXYUREA *XA149*

D	Drug	Do mg/kg	Di	V ml	T	R
1-*	Hydroxyurea	15	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Hydroxyurea																												

**Repetition:** \* Continuous administration**Note:**

- Dose adjustment according to response

**Literature:**

Cortelazzo S. et al., N Engl J Med 332: 1132ff, 1995

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

**7. CMPD****ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 87 Hematology

**7.2 ANAGRELIDE** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Anagrelide	4 x 0.5	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Anagrelide																												

**Repetition:** \* Continuous administration**Note:**

- Start therapy with 0.5 mg/d for a week, thereafter increase the dose weekly by 0.5 mg/d until the desired therapeutic effect is achieved. The total dose per day to be administered should be divided into 2x (every 12 h) or 3x (every 8 h). The drug at a dose higher than 5 mg/d should not be given.

**Literature:**

Petitt R.M. et al., Semin Hematol 34: 51ff, 1997

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

**7. CMPD****ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Other Chronic Myeloproliferative Diseases 88

**7.3 RUXOLITINIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Ruxolitinib	2 x 15 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Ruxolitinib																												

**Repetition:** \* Continuous administration**Note:**

- (#) The starting dose of Ruxolitinib is 15 mg given orally twice daily for patients with a platelet count between 100-200 G/L and 20 mg twice daily for patients with a platelet count > 200 G/L. Patients with a platelet count between 50-100 G/L should be started with 5 mg twice daily.

**Literature:**

Verstovsek S. et al., N Engl J Med 366: 799ff, 2012



## B Oncology

# **Chapter 1**

## **Lung Cancer**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 91 Lung Cancer

**1.1 Non-small Cell Lung Cancer – NSCLC****1.1.1 PEMBROLIZUMAB + CARBOPLATIN /  
PACLITAXEL   XA081 + XC204**

D	Drug	Do	Di	V ml	T	R
1	Pembrolizumab	200 mg	0.9% NaCl	100	30'	i.v.
1	Paclitaxel	200 mg/m <sup>2</sup>	0.9% NaCl	500	3h	i.v.
1	Carboplatin	AUC 6	5% Glucose	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Pembrolizumab											
Paclitaxel											
Carboplatin											

**Repetition:** Day 22**Number of cycles:** Carboplatin/Paclitaxel: 4;  
Pembrolizumab: up to 35**Note:**

- Pembrolizumab should be dissolved at 1 - 10 mg/ml
- Paclitaxel accompanying medication:
- *Premedication:* Dexamethasone 20 mg i.v. 30 min before Paclitaxel, or Dexamethasone 20 mg orally 12h and 6h before Paclitaxel. Additional premedication with 40 mg Famotidine and 30 mg Diphenhydramine is recommended.
- Diluted Paclitaxel solutions should be administered through non PVC-containing administration sets.



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 92

- Calculation of Carboplatin dose (Calvert):  
 $\text{Dose (mg)} = \text{target AUC} \times (\text{GFR} + 25)$

### Literature:

Paz-Ares L. et al., N Engl J Med 379: 2040ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 93 Lung Cancer

**1.1.2 PEMBROLIZUMAB + CARBOPLATIN /  
PEMETREXED      XA081 + XC206**

D	Drug	Do	Di	V ml	T	R
1	Pembrolizumab	200 mg	0.9% NaCl	100	30'	i.v.
1	Carboplatin	AUC 6	5% Glucose	500	1h	i.v.
1	Pemetrexed	500 mg/m <sup>2</sup>	0.9% NaCl	100	10'	i.v.

Cycle Day of therapy	1										2									
	1											22								
Pembrolizumab																				
Carboplatin																				
Pemetrexed																				

**Repetition:** Day 22**Number of cycles:** Carboplatin: 4;  
Pembrolizumab/Pemetrexed: up to 35**Note:**

- Pembrolizumab should be dissolved at 1 - 10 mg/ml
- 1-3 weeks prior to start of therapy with Pemetrexed substitution with 350 µg - 1000 µg folic acid orally daily till 3 weeks after completion of therapy  
Substitution with vitamin B12: 1000 µg i.m. (1 week preceding the first dose of pemetrexed and once every 9 weeks thereafter) till 3 weeks after completion of therapy  
Oral administration of dexamethasone 8 mg p.o. daily for 3 days starting on day 1 before Pemetrexed administration.



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD



## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 94

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- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)

### Literature:

Borghaei H. et al., J Thorac Oncol 14: 124ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 95 Lung Cancer

### 1.1.3 ATEZOLIZUMAB/CARBOPLATIN/ nab-PACLITAXEL XA054 + XC205

D	Drug	Do	Di	V ml	T	R
1	Atezolizumab	1200 mg	0.9% NaCl	250	30'*	i.v.
1	Carboplatin	AUC 6	5% Glucose	500	1h	i.v.
1,8, 15	nab-Paclitaxel	100 mg/m <sup>2</sup>	–	–	30'	i.v.

Cycle Day of therapy	1						2					
	1					8						22
Atezolizumab												
Carboplatin												
nab-Paclitaxel												

**Repetition:** Day 22**Number of cycles:** 4-6, Atezolizumab until progressive disease or intolerability**Note:**

- (\*) Atezolizumab: The initial dose should be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min. Atezolizumab should be dissolved at 4.4 mg/ml
- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)

**Literature:**

West H. et al., Lancet Oncol 20: 924ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 96

### 1.1.4 ATEZOLIZUMAB + BEVACIZUMAB + CARBOPLATIN / PACLITAXEL

XA054 + XA060 + XC204

D	Drug	Do	Di	V ml	T	R
1	Atezolizumab	1200 mg	0.9% NaCl	250	30' <sup>§</sup>	i.v.
1		15 mg/kg	0.9% NaCl	100	90'*	i.v.
1	Bevacizumab Paclitaxel	200 <sup>#</sup> mg/m <sup>2</sup>	0.9% NaCl	500	3h	i.v.
1	Carboplatin	AUC 6	5% Glucose	500	1h	i.v.

Cycle Day of therapy	1				2			
	1				22			
Atezolizumab								
Bevacizumab								
Paclitaxel								
Carboplatin								

**Repetition:** Day 22**Number of cycles:** 4-6; Atezolizumab or Bevacizumab, or both until progressive disease or intolerability



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 97 Lung Cancer

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**Note:**

- (§) Atezolizumab: The initial dose should be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min. Atezolizumab should be dissolved at 4.4 mg/ml
- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- Pembrolizumab should be dissolved at 1 - 10 mg/ml
- (#) Paclitaxel at a dose of 175 mg/m<sup>2</sup> for Asian patients  
Paclitaxel accompanying medication:  
*Premedication:* Dexamethasone 20 mg i.v. 30 min before Paclitaxel, or Dexamethasone 20 mg orally 12h and 6h before Paclitaxel. Additional premedication with 20 mg Famotidine and 30 mg Diphenhydramine is recommended.
- Diluted Paclitaxel solutions should be administered through non PVC-containing administration sets.
- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)

**Literature:**

Socinski M.A. et al., N Engl J Med 378: 2288ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 98

**1.1.5 PEMBROLIZUMAB XA081**

D	Drug	Do mg	Di	V ml	T	R
1	Pembrolizumab	200	0.9% NaCl	100	30'	i.v.

Cycle	1										2
Day of therapy	1										22
Pembrolizumab											

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- Pembrolizumab should be dissolved at 1-10 mg/ml

**Literature:**

Reck M. et al., N Engl J Med 375: 1823ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 99 Lung Cancer

**1.1.6 NIVOLUMAB XA085**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	3	0.9 NaCl	100	1h	i.v.

Cycle	1	2
Day of therapy	1	15
Nivolumab		

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- Nivolumab should be dissolved at 1 - 10 mg/ml
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480 mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)

**Literature:**

Brahmer J. et al., N Engl J Med 373: 123ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 100

**1.1.7 ATEZOLIZUMAB XA054**

D	Drug	Do mg	Di	V ml	T	R
1	Atezolizumab	1200	0.9% NaCl	500	30'*	i.v.

Cycle	1										2
Day of therapy	1										22
Atezolizumab											

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- (\*) Atezolizumab: The initial dose should be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- Atezolizumab should be dissolved at 4.4mg/ml

**Literature:**

Rittmeyer A. et al., Lancet 389: 255ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 101 Lung Cancer

**1.1.8 DURVALUMAB** XA117

D	Drug	Do mg/kg	Di	V ml	T	R
1	Durvalumab	10	0.9% NaCl	250	1h	i.v.

Cycle	1	2
Day of therapy	1	15
Durvalumab	<div><div></div></div>	<div><div></div></div>

**Repetition:** Day 15**Number of cycles:** For a maximum of 12 months**Note:**

- Durvalumab at a concentration of 1 – 15 mg/ml

**Literature:**

Antonia S.J. et al., N Engl J Med 377: 1919ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 102

**1.1.9 DOCETAXEL + RAMUCIRUMAB***XC412+ XA088*

D	Drug	Do	Di	V ml	T	R
1	Docetaxel	75 mg/m <sup>2</sup>	0.9% NaCl	250	1h	i.v.
1	Ramucirumab	10 mg/kg	0.9% NaCl	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Docetaxel											
Ramucirumab											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Docetaxel should be dissolved at 0.3-0.74 mg/ml
- Accompanying medication: Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration.

**Literature:**

Garon E.B. et al., Lancet 384: 665ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

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Contents

## 103 Lung Cancer

**1.1.10 VINORELBINE (oral) XA149**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	Vinorelbine	60	–	–	–	p.o.
22-*	Vinorelbine	80	–	–	–	p.o.

Cycle	1	2	3	4	5
Day of therapy	1	8	15	22	29
Vinorelbine	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Vinorelbine	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

**Repetition:** \* Weekly**Note:**

- In case of neutropenia (once WHO grade 4 or twice consecutively WHO grade 3):
  - Within the first 3 weeks following treatment initiation: maintain dosage at 60 mg/m<sup>2</sup>/week
  - In case of subsequent weeks: reduce dose from 80 mg/m<sup>2</sup>/week to 60 mg/m<sup>2</sup>/week

**Literature:**

Jassem J. et al., Ann Oncol 12: 1375ff, 2001

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 104

**1.1.11 PEMETREXED XC800**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Pemetrexed	500	0.9% NaCl	100	10'	i.v.

Cycle	1										2
Day of therapy	1										22
Pemetrexed											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- 1-3 weeks prior to start of therapy with Pemetrexed
- Substitution with 350 µg - 1000 µg Folic Acid orally daily till 3 weeks after completion of therapy.
- Substitution with Vitamin B12: 1000 µg i.m. (once every 9 weeks) till 3 weeks after completion of therapy.
- Oral administration of Dexamethasone 8 mg p.o. daily for 3 days starting on day 1 before administration of Pemetrexed.

**Literature:**

Hanna N. et al., J Clin Oncol 22: 1589ff, 2004



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 105 Lung Cancer

**1.1.12 GEMCITABINE / CISPLATIN +  
NECITUMUMAB XC592 + XA115**

D	Drug	Do	Di	V ml	T	R
1,8	Gemcitabine	1250 mg/m <sup>2</sup>	0.9% NaCl	500	30'	i.v.
1	Cisplatin	75 mg/m <sup>2</sup>	0.9% NaCl	1000	2h	i.v.
1,8	Necitumumab	800 mg	0.9% NaCl	250	1h	i.v.

Cycle Day of therapy	1							2						
	1						8							22
Gemcitabine														
Cisplatin														
Necitumumab														

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Premedication: 30 mg Diphenhydramine i.v.,  
12 mg Dexamethasone i.v.; 1000 mg Paracetamol p.o.
- Cisplatin (only if GFR  $\geq 60$  ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Thatcher N. et al., Lancet Oncol. 16: 763ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 106

**1.1.13 TRAMETINIB / DABRAFENIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Trametinib	2	–	–	–	p.o.
1-*	Dabrafenib	300 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Trametinib																												
Dabrafenib																												

**Repetition:** \* Continuous administration**Note:**

- (#) Divided into 2 equal doses

**Literature:**

Planchard D. et al., Lancet Oncol 18: 1307ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 107 Lung Cancer

## 1.1.14 AFATINIB XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Afatinib	40	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Afatinib																												

**Repetition:** \* Continuous administration**Literature:**

Sequist L.V. et al., J Clin Oncol 31: 3327ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 108

**1.1.15 OSIMERTINIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Osimertinib	80	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Osimertinib																												

**Repetition:** \* Continuous administration**Literature:**

Mok Y.L. et al., N Engl J Med 376: 629ff, 2017



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

### 109 Lung Cancer

#### 1.1.16 DACOMITINIB XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Dacomitinib	45	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Dacomitinib																												

**Repetition:** \* Continuous administration

**Literature:**

Wu Y.L. et al.; Lancet Oncol 18: 1454ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 110

**1.1.17 NINTEDANIB / DOCETAXEL XC412**

D	Drug	Do	Di	V ml	T	R
1	Docetaxel	75 mg/m <sup>2</sup>	0.9 NaCl	250	1h	i.v.
2- 21	Nintedanib	400 mg	–	–	–	p.o.

Cycle Day of therapy	1																					2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Docetaxel																						
Nintedanib																						

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Accompanying medication:* Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration.
- Nintedanib is administered at 200 mg twice daily. Patients who discontinue combination therapy because of docetaxel-related adverse events may continue Nintedanib monotherapy if at least 4 cycles of combination therapy were administered.

**Literature:**

Reck M. et al., Lancet Oncol 15: 143ff; 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 111 Lung Cancer

**1.1.18 ALECTINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Alectinib	1200 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Alectinib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) 600 mg (four 150 mg capsules) taken twice daily with food

**Literature:**

Peters S. et al., N Engl J Med 377: 829ff, 2017

Camidge D.R. et al., J Thorac Oncol 14: 1233ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Non-small Cell Lung Cancer 112

**1.1.19 BRIGATINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Brigatinib	180 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	kontinuierliche Gabe																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Brigatinib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) The recommended starting dose of Brigatinib is 90 mg once daily for the first 7 days, then 180 mg once daily

**Literature:**

Camidge D.R. et al., N Engl J Med 379: 2017ff, 2018



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 113 Lung Cancer

**1.1.20 LORLATINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Lorlatinib	100	–	–	–	p.o.

Zyklus Therapietag	kontinuierliche Gabe																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Lorlatinib																												

**Repetition:** \* Continuous administration**Literature:**

Solomon B.J. et al., Lancet Oncol 19: 1654ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**1.2 Small Cell Lung Cancer – SCLC****1.2.1 ATEZOLIZUMAB + CARBOPLATIN /  
ETOPOSIDE   XA054 + XC192**

D	Drug	Do	Di	V ml	T	R
1	Atezolizumab	1200 mg	0.9% NaCl	250	30'*	i.v.
1	Carboplatin	AUC 5	5% Glucose	500	1h	i.v.
1-3	Etoposide	100 mg/m <sup>2</sup>	0.9% NaCl	500	1h	i.v.

Cycle Day of therapy	1														2	
	1	2	3												22	
Atezolizumab																
Carboplatin																
Etoposide																

**Repetition:** Day 22**Number of cycles:** 4-6; Atezolizumab until progressive disease or intolerability**Note:**

- (\*) Atezolizumab: The initial dose should be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min. Atezolizumab should be dissolved at 4.4 mg/ml
- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)
- Etoposide should be dissolved in 1000 ml 0.9% NaCl if total dose is  $\geq 200$  mg.

**Literature:** Horn L. et al., N Engl J Med 379: 2220ff, 2018



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 115 Lung Cancer

### 1.2.2 EVANS

CAV XC032

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Doxorubicin	50	0.9% NaCl	500	1h	i.v.
1	Cyclophosphamide	1000	0.9% NaCl	1000	2h	i.v.
1	Vincristine	1.4*	0.9% NaCl	100	10'	i.v.

### CISPLATIN / ETOPOSIDE XC304

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-3	Cisplatin	25	0.9% NaCl	500	1h	i.v.
1-3	Etoposide	100	0.9% NaCl	500	1h	i.v.

Cycle	1			2			3
Day of therapy	1			22-24			43
Doxorubicin							
Cyclophosphamide							
Vincristine							
Cisplatin							
Etoposide							

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Small Cell Lung Cancer 116****Repetition:** Day 22 (alternating)**Number of cycles:** 6 (3x CAV  
and 3x Cisplatin/ Etoposide alternatingly)**Note:**

- Cisplatin (only if GFR  $\geq 60$  ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

- *Caution:* Cardiac toxicity of Doxorubicin at cumulative dose  $\geq 500$  mg/m<sup>2</sup>
- (\*) Vincristine max. 2 mg total doses
- *Mesna:* Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide
- Etoposide should be dissolved in 1000 ml 0.9% NaCl if total dose is  $\geq 200$  mg

**Literature:**

Evans W.K. et al., Ann Int Med 107: 451ff, 1987

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 117 Lung Cancer

**1.2.3 TOPOTECAN XC840**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-5	Topotecan	1.5	0.9% NaCl	100	30'	i.v.

Cycle	1										2
Day of therapy	1	2	3	4	5						22
Topotecan											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Topotecan should be dissolved at 0.025 - 0.05 mg/ml

**Literature:**

Ardizzoni A. et al., J Clin Oncol 15: 2090ff, 1997

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Small Cell Lung Cancer 118

**1.2.4 TEMOZOLOMIDE** *XA149*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-21	Temozolomide	75	–	–	–	p.o.

Cycle	1																					2
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Temozolomide																						

**Repetition:** Day 29**Literature:**

Pietanza C. et al., Clin Cancer Res 18: 1138ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 119 Lung Cancer

**1.3 MESOTHELIOMA****1.3.1 PEMETREXED / CISPLATIN XC326**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Pemetrexed	500	0.9% NaCl	100	10'	i.v.
1	Cisplatin	75	0.9% NaCl	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Pemetrexed											
Cisplatin											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- 1-3 weeks prior to start of therapy with Pemetrexed
- Substitution with 350 µg - 1000 µg Folic Acid orally daily till 3 weeks after completion of therapy.
- Substitution with Vitamin B12: 1000 µg i.m. (once every 9 weeks) till 3 weeks after completion of therapy.
- Oral administration of Dexamethasone 8 mg p.o. daily for 3 days starting on day 1 before administration of Pemetrexed.

- Cisplatin (only if GFR ≥60 ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:** Vogelzang N.J. et al., J Clin Oncol 21:2636ff, 2003

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Mesothelioma 120

**1.3.2 OXALIPLATIN / RALTITREXED XC760**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Raltitrexed	3	0.9% NaCl	100	15'	i.v.
1	Oxaliplatin	130	5% Glucose	500	2h	i.v.

Cycle	1										2
Day of therapy	1										22
Raltitrexed											
Oxaliplatin											

**Repetition:** Day 22**Number of cycles:** 4-6**Note:**

- Caution:* Oxaliplatin should be administered 1 hour after Raltitrexed.

**Literature:**

Fizazi K. et al., J Clin Oncol 18: 2293ff, 2000



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY****1. Lung Cancer**

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 121 Lung Cancer

**1.3.3 CISPLATIN / RALTITREXED XC812**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Raltitrexed	3	0.9% NaCl	100	15'	i.v.
1	Cisplatin	80	0.9% NaCl	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Raltitrexed											
Cisplatin											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Cisplatin (only if GFR  $\geq 60$  ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Van Meerbeeck J.P. et al., J Clin Oncol 23: 6881ff, 2005

## **Chapter 2**

# **Breast Cancer**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 123 Oncology

**2.1 EC / DOCETAXEL***XC364 (EC) + XC416 (Docetaxel)*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Epirubicin	90	0.9% NaCl	250	30'	i.v.
1	Cyclophosphamide	600	0.9% NaCl	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Epirubicin											
Cyclophosphamide											

**Repetition:** Day 22**Number of cycles:** 4**Note:**

- **Caution:** Cardiac toxicity of Epirubicin at cumulative dose  $\geq 1000$  mg/m<sup>2</sup>
- **Mesna:** Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Breast Cancer 124**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Docetaxel	100	0.9% NaCl	250	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Docetaxel											

**Repetition:** Day 22**Number of cycles:** 4**Note:**

- Docetaxel should be dissolved at 0.3-0.74 mg/ml
- *Accompanying medication:* Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration.

**Literature:**

Nitz U. et al., Ann Oncol 25: 1551ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 125 Oncology

**2.2 FEC / PERTUZUMAB / TRASTUZUMAB / DOCETAXEL (TRYPHAENA)***XC532 (FEC); XA082 + XA100 + XC412**(Pertuzumab/Trastuzumab/Docetaxel)*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Cyclophosphamide	600	0.9 NaCl	500	1h	i.v.
1	Epirubicin	100	0.9 NaCl	250	30'	i.v.
1	5-Fluorouracil	500	0.9 NaCl	100	20'	i.v.

Cycle	1										2
Day of therapy	1										22
Cyclophosphamide											
Epirubicin											
5-Fluorouracil											

**Repetition:** Day 22**Number of cycles:** 3**Note:**

- *Caution:* Cardiac toxicity of Epirubicin at cumulative dose  $\geq 1000 \text{ mg/m}^2$
- *Mesna:* Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Breast Cancer 126**

D	Drug	Do	Di	V ml	T	R
1	Pertuzumab	420 mg*	0.9 NaCl	250	1h	i.v.
1	Trastuzumab	6 mg/kg <sup>#</sup>	0.9 NaCl	500	90'	i.v.
1	Docetaxel	75 mg/m <sup>2</sup>	0.9 NaCl	250	1h	i.v.

Cycle	1				2			
Day of therapy	1				22			
Pertuzumab								
Trastuzumab								
Docetaxel								

**Repetition:** Day 22**Number of cycles:** 3**Note:**

- (\*) Pertuzumab „fixed loading dose“ of 840 mg at initial administration over 60 min. If well tolerated, subsequent doses can be administered over 30 min.
- (#) Trastuzumab „loading dose“ of 8 mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml.
- Docetaxel should be dissolved at 0.3-0.74 mg/ml
- *Accompanying medication:* Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration.
- *Optional:* Carboplatin/Docetaxel + Pertuzumab/Trastuzumab x 6

**Literature:** Schneeweiß A. et al., Ann Oncol 24: 2278ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 127 Oncology

**2.3 PACLITAXEL + TRASTUZUMAB***XC768 + XA100*

D	Drug	Do	Di	V ml	T	R
1	Paclitaxel	80 mg/m <sup>2</sup>	0.9% NaCl	250	3h	i.v.
1	Trastuzumab	2 mg/kg*	0.9% NaCl	250	90'	i.v.

Cycle	1	2	3	4	5
Day of therapy	1	8	15	22	29
Paclitaxel					
Trastuzumab					

**Repetition:** Day 8**Number of cycles:** 12**Note:**

- (\*) Trastuzumab „loading dose“ of 4 mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- After the completion of 12 weeks of induction treatment, Trastuzumab can be changed to 6 mg/kg every 3 weeks for 40 weeks.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml.

**Literature:**

Tolaney S.M. et al., N Engl J Med 372: 134ff, 2015  
 Ismael G. et al., Lancet Oncol 13: 869ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 128

## 2.4 PERTUZUMAB / TRASTUZUMAB / DOCETAXEL    XA082 + XA100 + XC412

D	Drug	Do	Di	V ml	T	R
1	Pertuzumab	420 mg*	0.9% NaCl	250	1h	i.v.
1	Trastuzumab	6 mg/kg <sup>#</sup>	0.9% NaCl	500	90'	i.v.
1	Docetaxel	75 mg/m <sup>2</sup>	0.9% NaCl	250	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Pertuzumab											
Trastuzumab											
Docetaxel											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- (\*) Pertuzumab „fixed loading dose“ of 840 mg at initial administration over 60 min. If well tolerated, subsequent doses can be administered over 30 min.
- (#) Trastuzumab „loading dose“ 8mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml
- Docetaxel should be dissolved at 0.3 – 0.74 mg/ml





## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 129 Oncology

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- *Accompanying medication:*

Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration

### Literature:

Baselga J. et al., N Engl J Med 366: 109ff, 2012

Swain S.M. et al., Lancet Oncol 14: 461ff, 2013

Ismael G. et al., Lancet Oncol 13: 869ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 130

**2.5 CYCLOPHOSPHAMIDE / LIPOSOMAL DOXORUBICIN CITRATE COMPLEX XC452**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Cyclophosphamide	600	0.9% NaCl	500	1h	i.v.
1	Liposomal Doxorubicin citrate complex (Myocet®)	60	0.9% NaCl	100	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Cyclophosphamide											
Lipos. Doxorub.c.c.											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Liposomal Doxorubicin citrate complex should be dissolved at 0.4 - 1.2 mg/ml
- *Mesna*: Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide

**Literature:**

Batist G. et al., J Clin Oncol 19: 1444ff, 2001

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 131 Oncology

**2.6 EPIRUBICIN / DOCETAXEL XC424**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Epirubicin	75	0.9% NaCl	500	1h	i.v.
1	Docetaxel	75	0.9% NaCl	250	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Epirubicin											
Docetaxel											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Caution:* Cardiac toxicity of Epirubicin at cumulative dose  $\geq 1000$  mg/m<sup>2</sup>
- *Accompanying medication:*  
Dexamethasone 8 mg orally 2x daily for 3 days starting on Day 1 before Docetaxel administration

**Literature:**

Bonnetterre J., Br J Cancer 91: 1466ff, 2004

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 132

**2.7 PEGYLATED LIPOSOMAL  
DOXORUBICIN XC452**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Pegylated liposomal Doxorubicin (Caelyx®)	50	5% Glucose	500	1h	i.v.

Cycle	1							2
Day of therapy	1							29
Peg. lip. Doxorub.								

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- Pegylated liposomal Doxorubicin should be dissolved in 250 ml of 5% Glucose if total dose is  $\leq 90$  mg and in 500 ml of 5% Glucose in case the total dose exceeds 90 mg.

**Literature:**

O'Brien M.E., Ann Oncol 15: 440ff, 2004

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 133 Oncology

**2.8 ATEZOLIZUMAB + nab-PACLITAXEL***XA054 + XC774*

D	Drug	Do	Di	V ml	T	R
1,15	Atezolizumab	840 mg	0.9% NaCl	250	30'*	i.v.
1,8, 15	nab-Paclitaxel	100 mg/m <sup>2</sup>	–	–	30'	i.v.

Cycle Day of therapy	1							2						
	1		8		15					29				
Atezolizumab														
nab-Paclitaxel														

**Repetition:** Day 29

**Number of cycles:** Nab-Paclitaxel: 6;  
Atezolizumab: Until progressive disease  
or intolerability

**Note:**

- (\*) Atezolizumab: The initial dose should be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- Atezolizumab should be dissolved at 4.4 mg/ml

**Literature:**

Schmid P. et al., N Engl J Med 379: 2108ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**2.9 DOCETAXEL / BEVACIZUMAB***XC416 + XA060*

D	Drug	Do	Di	V ml	T	R
1	Docetaxel	100 mg/m <sup>2</sup>	0.9% NaCl	250	1h	i.v.
1	Bevacizumab	15 mg/kg	0.9% NaCl	100	90'*	i.v.

Cycle	1				2
Day of therapy	1				22
Docetaxel					
Bevacizumab					

**Repetition:** Day 22**Number of cycles:** 6,  
*optional: Bevacizumab until progressive disease or intolerability***Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Accompanying medication:*  
Dexamethasone 8 mg orally 2x daily for 3 days starting one day before Docetaxel administration.
- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.

**Literature:**

Miles D., J Clin Oncol 28: 3239ff, 2010

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 135 Oncology

**2.10 DOCETAXEL / CARBOPLATIN /  
TRASTUZUMAB    XA100 + XC184**

D	Drug	Do	Di	V ml	T	R
1	Docetaxel	75 mg/m <sup>2</sup>	0.9% NaCl	250	1h	i.v.
1	Carboplatin	AUC 6	5% Glucose	500	30'	i.v.
1	Trastuzumab	6 mg/kg*	0.9% NaCl	250	90'	i.v.

Cycle	1										2
Day of therapy	1										22
Docetaxel											
Carboplatin											
Trastuzumab											

**Repetition:** Day 22**Number of cycles:** Trastuzumab adjuvant over 1 year;  
Docetaxel and Carboplatin for 6 cycles**Note:**

- Docetaxel should be dissolved at 0.3 – 0.74 mg/ml
- *Accompanying medication:*  
Dexamethasone 8 mg orally 2x daily for 3 days starting one day before Docetaxel administration.
- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

- (\*) Trastuzumab „loading dose“ 8 mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml.

### Literature:

Slamon D. et al., N Engl J Med. 365: 1273ff, 2011

Ismael G. et al., Lancet Oncol 13: 869ff, 2012



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 137 Oncology

## 2.11 GEMCITABINE / CISPLATIN

*XC592 (Day 1), XC592 (Day 8)*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8	Gemcitabine	750	0.9% NaCl	500	30'	i.v.
1,8	Cisplatin	30	0.9% NaCl	500	1h	i.v.

Cycle Day of therapy	1							2						
	1						8						22	
Gemcitabine														
Cisplatin														

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Cisplatin (only if GFR  $\geq 60$  ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Nagourney RA et al., J Clin Oncol, 18: 2245ff, 2000

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 138

**2.12 CAPECITABINE + BEVACIZUMAB XA060**

D	Drug	Do	Di	V ml	T	R
1-14	Capecitabine	2000 mg/m <sup>2</sup>	–	–	–	p.o.
1	Bevacizumab	15 mg/kg	0.9% NaCl	100	90'*	i.v.

Cycle Day of therapy	1														2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22	
Capecitabine																
Bevacizumab																

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Capecitabine: 2000 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening within 30 min after a meal
- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.

**Literature:**

Robert J.N. et al., J Clin Oncol 29: 1252ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 139 Oncology

**2.13 CAPECITABINE / LAPATINIB** XA149

D	Drug	Do	Di	V ml	T	R
1-14	Capecitabine	2000 mg/m <sup>2</sup>	–	–	–	p.o.
1-*	Lapatinib	1250 mg (absolute)	–	–	–	p.o.

Cycle	1														2
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22
Capecitabine															
Lapatinib															

**Repetition:** Capecitabine Day 22  
\* Lapatinib continuous administration

**Number of cycles:** 6

**Note:**

- Capecitabine: 2000 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening within 30 min after a meal

**Literature:**

Geyer C.E. et al., N Engl J Med 355: 2733ff, 2006

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 140

**2.14 LAPATINIB / TRASTUZUMAB***XA149 + XA100*

D	Drug	Do	Di	V ml	T	R
1-*	Lapatinib	1000 mg (absolute)	–	–	–	p.o.
1	Trastuzumab	6 mg/kg <sup>#</sup>	0.9% NaC	250	90'	i.v.

Cycle	1				2
Day of therapy	1				22
Lapatinib					
Trastuzumab					

**Repetition:** \* Lapatinib continuous administration  
Trastuzumab Day 22

**Number of cycles:** 6

**Note:**

- (<sup>#</sup>) Trastuzumab „loading dose“ 8 mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml.

**Literature:**

Blackwell K.L. et al., J Clin Oncol 28: 1124ff, 2010  
Ismael G. et al., Lancet Oncol 13: 869ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 141 Oncology

**2.15 TRASTUZUMAB** XA100

D	Drug	Do mg/kg	Di	V ml	T	R
1	Trastuzumab	6*	0.9% NaCl	250	90'*	i.v.

Cycle	1										2
Day of therapy	1										22
Trastuzumab											

**Repetition:** Day 22**Number of cycles:** Continuous administration  
over 12 months**Note:**

- (\*) Trastuzumab „loading dose“ 8 mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml.

**Literature:**

Piccart-Gebhard M.J. et al., N Engl J Med 353: 1659ff, 2005  
 Romond E.H. et al., N Engl J Med 353: 1673ff, 2005  
 Ismael G. et al., Lancet Oncol 13: 869ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 142

**2.16 TRASTUZUMAB-EMTANSINE** *XA112*

D	Drug	Do mg/kg	Di	V ml	T	R
1	Trastuzumab- Emtansine	3.6	0.9% NaCl	250	90'*	i.v.

Cycle	1										2
Day of therapy	1										22
Trastuzumab-Emt.											

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- (\*) Initial administration of Trastuzumab-Emtasine over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Use of in-line filter is required.

**Literature:**

Verma S. et al., N Engl J Med 367: 1783ff, 2012

von Minckwitz G. et al., N Engl J Med 379: 2108ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 143 Oncology

**2.17 ERIBULIN MESYLATE** XA494

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8	Eribulin Mesylate*	1.4	0.9% NaCl	50	2-5'	i.v.

Cycle	1							2
Day of therapy	1		8					22
Eribulin Mesylate								

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- (\*) equivalent Eribulin dose of 1.23 mg/m<sup>2</sup> d1, 8

**Literature:**

Cortes J. et al., Lancet 377: 914ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 144

**2.18 nab-PACLITAXEL XC774**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	nab-Paclitaxel	260	–	–	30'	i.v.

Cycle	1					2
Day of therapy	1					22
nab-Paclitaxel						

**Repetition:** Day 22**Number of cycles:** 6**Literature:**

Gradishar W.J. et al., J Clin Oncol 23: 7794, 2005



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 145 Oncology

**2.19 PALBOCICLIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-21	Palbociclib	125	–	–	–	p.o.

Cycle Day of therapy	1																					2						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21					29		
Palbociclib																												

**Repetition:** Day 29**Note:**

- Administration only in combination with an endocrine therapy

**Literature:**

Turner N.C. et al. N Engl J Med 373: 209ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 146

**2.20 RIBOCICLIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Ribociclib	600	–	–	–	p.o.

Cycle Day of therapy	1																					2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		29
Ribociclib																							

**Repetition:** Day 29**Note:**

- The recommended dose is 600mg (three 200 mg film-coated tablets) of ribociclib once daily. Ribociclib should be used together with an aromatase inhibitor.

**Literature:**

Hortobagyi G.N. et al., N Engl J Med 375: 1738ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 147 Oncology

**2.21 ABEMACICLIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Abemaciclib	300	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Abemaciclib																												

**Repetition:** \* Continuous administration**Note:**

- The recommended dose of Abemaciclib is 150 mg twice daily.  
Administration only in combination with endocrine therapy.

**Literature:**

Goetz M.P. et al., J Clin Oncol 35: 3638ff, 2017  
Sledge G.W. et al., J Clin Oncol 35: 2875ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

**2. Breast Cancer**

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Breast Cancer 148

**2.22 TALAZOPARIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Talazoparib	1	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Talazoparib																												

**Repetition:** \* kontinuierliche Gabe**Literature:**

Litton J.K. et al., N Engl J Med 379: 753ff, 2018

## **Chapter 3**

# **Gastrointestinal Tumors**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 150 Gastrointestinal Tumors

**3.1 Esophageal Cancer****3.1.1 5FU / CISPLATIN XC284**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Cisplatin	100	0.9% NaCl	500	2h	i.v.
1-5	5-Fluorouracil	1000	0.9% NaCl	1000	24h	i.v.

Cycle Day of therapy	1					2	
	1	2	3	4	5	29 (22*)	
Cisplatin	■						■
5-Fluorouracil	■	■	■	■	■		■

**Repetition:** Day 29 (22\*)**Number of cycles:** 6**Note:**

- Cisplatin (if GFR  $\geq 60$  ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.

200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

(\* Bleiberg H. et al., Eur J Cancer 33: 1216ff, 1997)

Kelsen D.P. et al., N Engl J Med 339: 1979ff, 1998

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.2 Gastric Cancer****3.2.1 5FU / LEUCOVORIN / OXALIPLATIN /  
DOCETAXEL (FLOT) XC546**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1	Calcium folinate*	200	0.9 NaCl	250	2h	i.v.
1	5-Fluorouracil	2600	0.9 NaCl	500	24h	i.v.
1	Docetaxel	50	0.9 NaCl	250	1h	i.v.

Cycle Day of therapy	1								2							
	1								15							
Oxaliplatin																
Calcium folinate																
5-Fluorouracil																
Docetaxel																

**Repetition:** Day 15**Number of cycles:** 8 [4 preoperatively and 4 postoperatively]**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU
- Docetaxel should be dissolved at 0.3-0.74 mg/ml
- Accompanying medication:* Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration.

**Literature:** Al-Batran S.E. et al., Lancet 393: 1948ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 152 Gastrointestinal Tumors

**3.2.2 5FU / LEUCOVORIN / OXALIPLATIN (FLO)  
XC752**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1	Calcium folinate*	200	0.9% NaCl	250	2h	i.v.
1	5-Fluorouracil	2600	0.9% NaCl	500	24h	i.v.

Cycle Day of therapy	1							2						
	1							15						
Oxaliplatin														
Calcium folinate														
5-Fluorouracil														

**Repetition:** Day 15**Number of cycles:** 6**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU

**Literature:**

Al-Batran S.E. et al., J Clin Oncol 26:1435ff, 2008



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Gastric Cancer 153

**3.2.3 DOCETAXEL XC412**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Docetaxel	75	0.9 NaCl	250	1h	i.v.

Cycle	1					2
Day of therapy	1					22
Docetaxel						

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Accompanying medication:* Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration.

**Literature:**

Ford H.E.R. et al., Lancet Oncol 15: 78ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 154 Gastrointestinal Tumors

**3.2.4 IRINOTECAN XC660**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Irinotecan	150	0.9% NaCl	500	90'	i.v.

Cycle	1				2			
Day of therapy	1				15			
Irinotecan								

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- Accompanying medication: Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.

**Literature:**

Kang J.H. et al., J Clin Oncol 30: 1513ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.2.5 PACLITAXEL / RAMUCIRUMAB***XC768 + XA088*

D	Drug	Do	Di	V ml	T	R
1,15	Ramucirumab	8 mg/kg	0.9 NaCl	500	1h	i.v.
1,8, 15	Paclitaxel	80 mg/m <sup>2</sup>	0.9 NaCl	250	1h	i.v.

Cycle Day of therapy	1							2						
	1		8		15					29				
Ramucirumab														
Paclitaxel														

**Repetition:** Day 29**Note:**

- Premedication with 30 mg Diphenhydramine recommended
- Ramucirumab can also be administered as monotherapy
- Paclitaxel should be dissolved at 0.3 - 1.2 mg/ml.
- *Paclitaxel-accompanying medication:*  
Dexamethasone 20 mg i.v. 30 min before Paclitaxel, or Dexamethasone 20 mg orally 6 h and 12 h before Paclitaxel. Additional premedication with 50 mg Ranitidine and 30 mg Diphenhydramine is recommended.
- Diluted Paclitaxel solutions should be administered through non PVC-containing administration sets.

**Literature:**

Wilke H.J. et al., Lancet Oncol 15: 1224ff, 2014

Fuchs C.S. et al., Lancet 383: 31ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 156 Gastrointestinal Tumors

**3.2.6 OXALIPLATIN / IRINOTECAN XC672**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,15	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1,15	Irinotecan	125	0.9% NaCl	500	30'	i.v.

Cycle	1															2
Day of therapy	1														15	29
Oxaliplatin																
Irinotecan																

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.

**Literature:**

Wöll E. et al., Anticancer Res 28: 2901ff, 2008

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

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**3.2.7 TRIFLURIDINE / TIPIRACIL XA149**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-5, 8-12	Trifluridine/Tipiracil	70	–	–	–	p.o.

Cycle Day of therapy	1												2
	1	2	3	4	5	8	9	10	11	12			29
Trifluridine/Tipiracil													

**Repetition:** Day 29**Number of cycles:** Until progressive disease or intolerability**Note:**

- Trifluridine/Tipiracil: 70 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening.

**Literature:**

Shitara K. et al., Lancet Oncol 19: 1437ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 158 Gastrointestinal Tumors

**3.2.8 CAPECITABINE / 5FU + CISPLATIN + TRASTUZUMAB (ToGA) XA280 + XA100**

D	Drug	Do	Di	V ml	T	R
1-14	Capecitabine	2000 mg/m <sup>2</sup>	–	–	–	p.o.
1	Cisplatin	80 mg/m <sup>2</sup>	0.9% NaCl	1000	2h	i.v.
1	Trastuzumab	6* mg/kg	0.9% NaCl	250	90'*	i.v.

Cycle Day of therapy	1														2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22	
Capecitabine																
Cisplatin																
Trastuzumab																

**Repetition:** Day 22**Number of cycles:** 6, Trastuzumab until progressive disease or intolerability**Note:**

- Restricted to HER2 positive patients
- (\*) Trastuzumab „loading dose“ 8 mg/kg at initial administration over 90 min. If well tolerated, subsequent doses can be administered over 30 min.
- Trastuzumab can also be administered subcutaneously at a fixed dose of 600 mg/5 ml.
- Capecitabine: 2000 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening within 30 min after a meal. As an alternative, Capecitabine can be substituted by 5FU: 5FU 800 mg/m<sup>2</sup>/d as continuous infusion on day 1-5 (repetition: q3w)

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

- Cisplatin (only if GFR  $\geq$  60 ml/min):

*Accompanying medication:**Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl**Literature:**

Bang Y.J. et al., Lancet 376: 687ff, 2010

Ismael G. et al., Lancet Oncol 13: 869ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 160 Gastrointestinal Tumors

**3.3 Pancreatic Cancer and Cholangiocellular Carcinoma****3.3.1 Modified FOLFIRINOX XC578**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1	Irinotecan	150	0.9% NaCl	500	90'	i.v.
1	Calcium folinate*	400	0.9% NaCl	250	2h	i.v.
1	5-Fluorouracil	2400	0.9% NaCl	500	46h	i.v.

Cycle	1								2							
Day of therapy	1								15							
Oxaliplatin																
Irinotecan																
Calcium folinate*																
5-Fluorouracil																

**Repetition:** Day 15**Number of cycles:** 12**Note:**

- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

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**Pancreatic Cancer and Cholangiocellular Carcinoma 161**

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- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.
- (\*) Calcium folinate as modulator of 5FU should always be administered before 5FU.

**Literature:**

Conroy T. et al., N Engl J Med 379: 2395ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 162 Gastrointestinal Tumors

**3.3.2 GEMCITABINE / CAPECITABINE XC592**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	Gemcitabine	1000	0.9% NaCl	500	30'	i.v.
1-21	Capecitabine	1660	–	–	–	p.o.

Cycle Day of therapy	1																					2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Gemcitabine																						
Capecitabine																						

**Repetition:** Day 29**Note:**

- Capecitabine: 1660 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening within 30 min after a meal

**Literature:**

Neoptolemos J.P. et al., N Engl J Med 389: 1011ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Pancreatic Cancer and Cholangiocellular Carcinoma 163****3.3.3 GEMCITABINE XC592**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Gemcitabine	1000	0.9% NaCl	500	30'	i.v.

Cycle	1						
Day of therapy	1	8	15	22*	29	35	43
Gemcitabine							
Cycle	2			3			
Day of therapy	1	8	15			29	
Gemcitabine							

**Repetition:** weekly x 7 (the first cycle should be terminated early if  $\geq$  grade 2 non-hematologic or  $\geq$  grade 3 hematologic toxicity); then day 1, 8, 15 repetition on day 29

**Number of cycles:** 6 (with cycle 1 over 7 weeks)

**Literature:**

Burris H.A. et al.; J Clin Oncol 15: 2403ff, 1997

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 164 Gastrointestinal Tumors

**3.3.4 nab-PACLITAXEL / GEMCITABINE XC595**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	nab-Paclitaxel	125	–	–	30'	i.v.
1,8, 15	Gemcitabine	1000	0.9% NaCl	500	30'	i.v.

Cycle Day of therapy	1												2																			
	1												8					15						29								
NAB-Paclitaxel																																
Gemcitabine																																

**Repetition:** Day 29**Number of cycles:** 6**Literature:**

Von Hoff D.D. et al., N Engl J Med 369: 1691ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Pancreatic Cancer and Cholangiocellular Carcinoma 165****3.3.5 PEGYLATED LIPOSOMAL IRINOTECAN / 5FU / LEUCOVORIN XC667**

T	Wirkstoff	D mg/m <sup>2</sup>	TL	V ml	Z	A
1,15	Pegylated liposomal Irinotecan	70	0.9% NaCl	500	90'	i.v.
1,15	Calcium folinate*	400	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	2400	0.9% NaCl	500	46h	i.v.

Cycle	1				2			
Day of therapy	1			15			29	
Peg. lip. Irinotecan								
Calcium folinate								
5-Fluorouracil								

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- **Caution:** Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- **Accompanying medication:** Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.
- (\*) Calcium folinate as modulator of 5FU should always be administered before 5FU

**Literature:** Wang-Gilliam A. et al., Lancet 387: 545ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 166 Gastrointestinal Tumors

**3.3.6 OXALIPLATIN / LEUCOVORIN / 5FU (OFF)**  
*XC752 (Day 8,22)*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
8,22	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1,8, 15, 22	Calcium folinate*	200	0.9% NaCl	250	2h	i.v.
1,8, 15, 22	5-Fluorouracil	2000	0.9% NaCl	1000	24h	i.v.

Cycle Day of therapy	1						2
	1	8	15	22			43
Oxaliplatin							
Calcium folinate							
5-Fluorouracil							

**Repetition:** Day 43**Number of cycles:** Until disease progression**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.

**Literature:**

Pelzer U. et al., Onkologie 32: 99ff, 2009

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Pancreatic Cancer and Cholangiocellular Carcinoma 167****3.3.7 GEMCITABINE / CISPLATIN XC592**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8	Cisplatin	25	0.9 NaCl	500	1h	i.v.
1,8	Gemcitabine	1000	0.9 NaCl	500	30'	i.v.

Cycle	1								2							
Day of therapy	1							8								22
Cisplatin																
Gemcitabine																

**Repetition:** Day 22**Number of cycles:** 8**Note:**

- Regimen for cholangiocellular carcinomas
- Cisplatin (only if GFR  $\geq 60$  ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Valle J.W., Br J Cancer 101: 621ff, 2009

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 168 Gastrointestinal Tumors

**3.3.8 Modified FOLFOX-6 XC588**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,15	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1,15	Calcium folinate*	200	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	400	–	–	Bolus	i.v.
1,15	5-Fluorouracil	2400	0.9% NaCl	500	46h	i.v.

Cycle Day of therapy	1				2			
	1			15			29	
Oxaliplatin								
Calcium folinate								
5-Fluorouracil, Bolus								
5-Fluorouracil								

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.

**Literature:**

Lamarca A. et al., J Clin Oncol 37 (suppl): abstr. 4003



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Pancreatic Cancer and Cholangiocellular Carcinoma 169****3.3.9 CAPECITABINE XA149**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-14	Capecitabine	2500	–	–	–	p.o

Cycle Day of therapy	1														2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22
Capecitabine															

**Repetition:** Day 22**Number of cycles:** 8**Note:**

- 2500 mg/m<sup>2</sup> divided into 2 equal doses, administered morning and evening within 30 min after a meal.

**Literature:**

Primrose J.N. et al., Lancet Oncol 20: 663ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 170 Gastrointestinal Tumors

**3.4 Hepatocellular Carcinoma****3.4.1 SORAFENIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Sorafenib	800	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Sorafenib																												

**Repetition:** \* Continuous administration**Note:**

- Sorafenib 800 mg divided into 2 equal doses, morning and evening

**Literature:**

Llovet J.M. et al., N Engl J Med 359: 378ff, 2008

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Hepatocellular Carcinoma 171

**3.4.2 LENVATINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Lenvatinib	12*	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Lenvatinib																												

**Repetition:** \* continuous administration**Note:**

- (\*) Lenvatinib 8 mg/day for patients with < 60kg body weight

**Literature:**

Kudo M. et al., Lancet 391: 1163ff, 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 172 Gastrointestinal Tumors

**3.4.3 REGORAFENIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Regorafenib	160*	–	–	–	p.o.

Cycle Day of therapy	1																							2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21			29
Regorafenib																								

**Repetition:** Day 29**Note:**

- (\*) 160 mg (4 tablets of 40 mg) taken at once

**Literature:**

Bruix J. et al., Lancet 389: 56ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 3.5 Colorectal Cancer

### 3.5.1 5FU / CALCIUM FOLINATE XA149

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,2, 15, 16	Calcium folinate*	200	0.9% NaCl	250	2h	i.v.
1,2, 15, 16	5-Fluorouracil	400	–	–	Bolus	i.v.
1,2, 15, 16	5-Fluorouracil	600	0.9% NaCl	500	22h	i.v.

Cycle	1															2
Day of therapy	1	2									15	16				29
Calcium folinate																
5-Fluorouracil, Bolus																
5-Fluorouracil																

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.

**Literature:**

De Gramont A. et al., J Clin Oncol 15: 808ff, 1997

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 174 Gastrointestinal Tumors

**3.5.2 FOLFIRI + BEVACIZUMAB***XC572 + XA060*

D	Drug	Do	Di	V ml	T	R
1,15	Irinotecan	180 mg/m <sup>2</sup>	0.9% NaCl	500	90'	i.v.
1,2, 15, 16	Calcium folinate*	200 mg/m <sup>2</sup>	0.9% NaCl	250	2h	i.v.
1,2, 15, 16	5-Fluorouracil	400 mg/m <sup>2</sup>	–	–	Bolus	i.v.
1,2, 15, 16	5-Fluorouracil	600 mg/m <sup>2</sup>	0.9% NaCl	500	22h	i.v.
1,15	Bevacizumab	5 mg/kg	0.9% NaCl	100	90' <sup>#</sup>	i.v.

Cycle Day of therapy	1															2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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**Repetition:** Day 29**Number of cycles:** 6*optional: Bevacizumab until progressive disease or for a maximum of 96 weeks*

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Note:**

- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.
- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU
- (#) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.

**Literature:**

Hurwitz H. et al., N Engl J Med 350: 2335ff, 2004

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

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## 176 Gastrointestinal Tumors

**3.5.3 FOLFIRI + AFLIBERCEPT XC572 + XA042**

D	Drug	Do	Di	V ml	T	R
1,15	Aflibercept	4 mg/kg	0.9% NaCl	500	1h	i.v.
1,15	Irinotecan	180 mg/m <sup>2</sup>	0.9% NaCl	500	90'	i.v.
1,15	Calcium folinate*	400 mg/m <sup>2</sup>	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	400 mg/m <sup>2</sup>	–	–	Bolus	i.v.
1,15	5-Fluorouracil	2400 mg/m <sup>2</sup>	0.9% NaCl	500	46h	i.v.

Cycle Day of therapy	1				2			
	1			15			29	
Aflibercept								
Irinotecan								
Calcium folinate								
5-Fluorouracil, Bolus								
5-Fluorouracil								

Repetition: Day 29

Number of cycles: 6



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Note:**

- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.
- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU
- Aflibercept should be dissolved at 0.6mg/ml to 0.8 mg/ml

**Literature:**

Van Cutsem E. et al., J Clin Oncol 30: 3499ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 178 Gastrointestinal Tumors

**3.5.4 FOLFIRI + RAMUCIRUMAB***XC572 + XA088*

D	Drug	Do	Di	V ml	T	R
1,15	Ramucirumab	8 mg/kg	0.9% NaCl	250	1h	i.v.
1,15	Irinotecan	180 mg/m <sup>2</sup>	0.9% NaCl	500	90'	i.v.
1,15	Calcium folinate*	200 mg/m <sup>2</sup>	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	400 mg/m <sup>2</sup>	–	–	Bolus	i.v.
1,15	5-Fluorouracil	2400 mg/m <sup>2</sup>	0.9% NaCl	500	46h	i.v.

Cycle Day of therapy	1				2			
	1			15			29	
Ramucirumab								
Irinotecan								
Calcium folinate								
5-Fluorouracil, Bolus								
5-Fluorouracil								

Repetition: Day 29

Number of cycles: 6

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Note:**

- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.
- (\*) Calcium folinate as modulator of 5FU should always be administered before 5FU

**Literature:**

Tabernero J. et al., Lancet Oncol 16: 499ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

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## 180 Gastrointestinal Tumors

**3.5.5 FOLFOX-4 + BEVACIZUMAB***XC588 + XA060*

D	Drug	Do	Di	V ml	T	R
1,15	Oxaliplatin	85 mg/m <sup>2</sup>	5% Glucose	500	2h	i.v.
1,2,15,16	Calcium folinate*	200 mg/m <sup>2</sup>	0.9% NaCl	250	2h	i.v.
1,2,15,16	5-Fluorouracil	400 mg/m <sup>2</sup>	–	–	Bolus	i.v.
1,2,15,16	5-Fluorouracil	600 mg/m <sup>2</sup>	0.9% NaCl	500	22h	i.v.
1,15	Bevacizumab	5 mg/kg	0.9% NaCl	100	90 <sup>1#</sup>	i.v.

Cycle Day of therapy	1															2				
	1	2																		
Oxaliplatin																				
Calcium folinate																				
5-Fluorouracil, Bolus																				
5-Fluorouracil																				
Bevacizumab																				

**Repetition:** Day 29**Number of cycles:** 6*optional: Bevacizumab until progressive disease or intolerability*

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.
- (#) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.

**Literature:**

Saltz et al., J Clin Oncol 26: 2013ff, 2008



<b>HEMATOLOGY</b>	2. Low Grade NHL	4. Multiple Myeloma	6. CML
1. High Grade NHL	3. Hodgkin's	5. MDS	7. CMPD
<b>ONCOLOGY</b>	<b>3. Gastrointestinal</b>	6. GIST	9. Thyroid
1. Lung Cancer	4. ENT	7. Melanoma	10. Urogenital Tract
2. Breast Cancer	5. Soft Tissue	8. Merkel	

## 182 Gastrointestinal Tumors

### 3.5.6 FOLFOX-4 + PANITUMUMAB

XC588 + XA080

D	Drug	Do	Di	V ml	T	R
1,15	Panitumumab	6 mg/kg	0.9% NaCl	100	1h	i.v.
1,15	Oxaliplatin	85 mg/m <sup>2</sup>	5% Glucose	500	2h	i.v.
1,2, 15, 16	Calcium folinate*	200 mg/m <sup>2</sup>	0.9% NaCl	250	2h	i.v.
1,2, 15, 16	5-Fluorouracil	400 mg/m <sup>2</sup>	–	–	Bolus	i.v.
1,2, 15, 16	5-Fluorouracil	600 mg/m <sup>2</sup>	0.9% NaCl	500	22h	i.v.

Cycle	1				2
Day of therapy	1	2	15	16	29
Panitumumab					
Oxaliplatin					
Calcium folinate					
5-Fluorouracil, Bolus					
5-Fluorouracil					

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

6. CML

5. MDS

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Table of  
Contents**Repetition:** Day 29**Number of cycles:** 6**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.
- Panitumumab > 1000 mg should be dissolved in 150 ml 0.9% NaCl and administered over 90 min.  
If well tolerated, subsequent doses can be administered over 30 min.

**Literature:**

Douillard J.Y. et al., J Clin Oncol 28: 4697ff, 2010

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 184 Gastrointestinal Tumors

**3.5.7 FOLFIRI + CETUXIMAB***XC572 + XA070*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15, 22	Cetuximab	250 <sup>#</sup>	0.9% NaCl	500	1h	i.v.
1,15	Irinotecan	180	0.9% NaCl	500	90'	i.v.
1,15	Calcium folinate*	400	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	400	–	–	Bolus	i.v.
1,15	5-Fluorouracil	2400	0.9% NaCl	500	46h	i.v.

Cycle Day of therapy	1				2			
	1	8	15	22	29			
Cetuximab								
Irinotecan								
Calcium folinate								
5-Fluorouracil, Bolus								
5-Fluorouracil								

Repetition: Day 29

Number of cycles: 6



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**Note:**

- (\*) Calcium folinate as modulator of 5FU should always be administered before 5FU
- (#) Cetuximab: Initial administration over 120 min. at a dose of 400 mg/m<sup>2</sup> before chemotherapy. A one hour gap is mandatory between Cetuximab and other chemotherapeutic agents.
- Optional administration of Cetuximab (500 mg/m<sup>2</sup>) in 2-week intervals possible (Yuan et al., JCO 27, 2009 suppl, abstr. e15018)
- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.

**Literature:**

Van Cutsem E. et al., N Engl J Med 360: 1408ff, 2009

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 186 Gastrointestinal Tumors

**3.5.8 Modified FOLFOX-6 XC588**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,15	Oxaliplatin	85	5% Glucose	500	2h	i.v.
1,15	Calcium folinate*	200	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	400	–	–	Bolus	i.v.
1,15	5-Fluorouracil	2400	0.9% NaCl	500	46h	i.v.

Cycle	1				2			
Day of therapy	1			15			29	
Oxaliplatin								
Calcium folinate								
5-Fluorouracil, Bolus								
5-Fluorouracil								

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.

**Literature:**

Pectasides D. et al., BMC Cancer 15: 384ff, 2015



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

## 3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

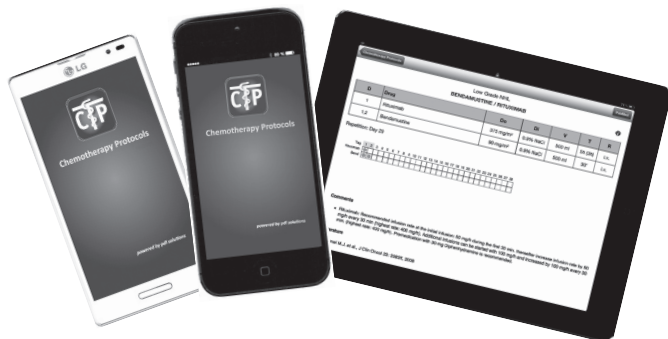
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[www.chemoprotocols.com](http://www.chemoprotocols.com)



## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

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<b>Breast Cancer</b>	

Chemotherapy Protocols PubMed

### Low Grade NHL BENDAMUSTINE / RITUXIMAB



D	Drug	Do	Di	V	T	R
1	Rituximab	375 mg/m <sup>2</sup>	0.9% NaCl	500 ml	5h (3h)	i.v.
1,2	Bendamustine	90 mg/m <sup>2</sup>	0.9% NaCl	500 ml	30'	i.v.

Repetition: Day 29

Tag	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Rituximab	●																											
Bend	●																											

#### Comments

- Rituximab: Recommended infusion rate at the initial infusion: 50 mg/h during the first 30 min, thereafter increase infusion rate by 50 mg/h every 30 min (highest rate: 400 mg/h). Additional infusions can be started with 100 mg/h and increased by 100 mg/h every 30 min. (highest rate: 400 mg/h). Premedication with 30 mg Diphenhydramine is recommended.

#### Literature

Rummel M.J. et al., J Clin Oncol 23: 3383ff, 2008

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.5.9 FOLFOXIRI + BEVACIZUMAB***XC578+XA060*

D	Drug	Do	Di	V ml	T	R
1,15	Bevacizumab*	5 mg/kg	0.9% NaCl	100	1h	i.v.
1,15	Irinotecan	165 mg/m <sup>2</sup>	0.9% NaCl	500	1h	i.v.
1,15	Oxaliplatin	85 mg/m <sup>2</sup>	5% Glucose	500	2h	i.v.
1,15	Calcium folinate <sup>#</sup>	200 mg/m <sup>2</sup>	0.9% NaCl	250	2h	i.v.
1,15	5-Fluorouracil	3200 mg/m <sup>2</sup>	0.9% NaCl	1000	48h	i.v.

Cycle	1				2			
Day of therapy	1		15		29			
Bevacizumab								
Irinotecan								
Oxaliplatin								
Calcium folinate								
5-Fluorouracil								

**Repetition:** Day 29**Number of cycles:** 6*optional:* Bevacizumab until progressive disease or intolerability

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 190 Gastrointestinal Tumors

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**Note:**

- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- *Caution:* Irinotecan can lead to life-threatening diarrhea and cholinergic symptoms. Diarrhea can appear either as acute reaction or also some days after Irinotecan administration.
- *Accompanying medication:* Atropine 0.2 mg s.c. or i.v.
- In case of diarrhea: Loperamide initially 4 mg, thereafter 2 mg every 2 hours. Loperamide should be continued for 12 hours following resolution of the diarrhea. If it persists longer than 48 hours, or if there is fever, administration of Ciprofloxacin and hospitalisation is recommended.
- (#) Calcium folinate as modulator of 5FU should always be administered before 5FU

**Literature:**

Cremolini C. et al., Lancet Oncol 16: 1306ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.5.10 HD 5FU (modified according to Ardan)**  
**XA149**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15, 22, 29, 36	Calcium folinate*	500	0.9% NaCl	250	2h	i.v.
1,8, 15, 22, 29, 36	5-Fluorouracil	2600	0.9% NaCl	1000	22h	i.v.

Cycle	1						2
Day of therapy	1	8	15	22	29	36	50
Calcium folinate							
5-Fluorouracil							

**Repetition:** Day 50**Number of cycles:** Until progressive disease or intolerability**Note:**

- (\*) Calcium folinate as a modulator of 5FU should always be administered before 5FU.

**Literature:**

Weh H.J. et al., Ann Oncol 5: 233ff, 1994

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 192 Gastrointestinal Tumors

**3.5.11 CAPECITABINE** *XA149*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-14	Capecitabine	2500	–	–	–	p.o

Cycle Day of therapy	1														2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22	
Capecitabine																

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- 2500 mg/m<sup>2</sup> divided into 2 equal doses, administered morning and evening within 30 min after a meal.

**Literature:**

Twelves C. et al., Eur J Cancer 37: 597ff, 2001



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.5.12 CAPECITABINE / OXALIPLATIN XC752**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-14	Capecitabine	2000	–	–	–	p.o.
1,8	Oxaliplatin	70	5% Glucose	500	2h	i.v.

Cycle Day of therapy	1														2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	22	
Capecitabine																
Oxaliplatin																

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Capecitabine 2000 mg/m<sup>2</sup> divided into 2 equal doses, administered morning and evening within 30 min after a meal.
- In the adjuvant setting, Oxaliplatin will be administered at a dose of 130 mg/m<sup>2</sup> on day 1 (repetition: d22), while the dose and schedule of Capecitabine will be maintained at 2000 mg/m<sup>2</sup>. (No of cycles: 8).  
(Haller D. et al., J Clin Oncol 29: 1465ff, 2011)

**Literature:**

Porschen R. et al., J Clin Oncol 25: 421ff, 2007

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 194 Gastrointestinal Tumors

**3.5.13 RALTITREXED XC812**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Raltitrexed	3	0.9% NaCl	100	15'	i.v.

Cycle	1					2
Day of therapy	1					22
Raltitrexed						

**Repetition:** Day 22**Number of cycles:** 6**Literature:**

Cunnigham D. et al., Eur J Cancer, 31A: 1945ff, 1995

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.5.14 PANITUMUMAB XA080**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Panitumumab	6	0.9% NaCl	100	1h	i.v.

Cycle	1										2									
Day of therapy	1										15									
Panitumumab																				

**Repetition:** Day 15**Note:**

- Panitumumab >1000 mg should be dissolved in 150 ml of 0.9% NaCl and administered over 90 min.

**Literature:**

Van Cutsem E. et al., J Clin Oncol 25: 1658ff, 2007

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 196 Gastrointestinal Tumors

**3.5.15 REGORAFENIB**    *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Regorafenib	160*	–	–	–	p.o.

Cycle Day of therapy	1																					2						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21							29
Regorafenib																												

**Repetition:**                      Day 29**Note:**

- (\*) 160 mg (4 tablets of 40 mg) taken at once

**Literature:**

Grothey A. et al., Lancet 381: 303ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.5.16 TRIFLURIDINE / TIPIRACIL** XA149

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-5, 8-12	Trifluridine/Tipiracil	70	–	–	–	p.o.

Cycle Day of therapy	1												2
	1	2	3	4	5	8	9	10	11	12			29
Trifluridin/Tipiracil													

**Repetition:** Day 29**Note:**

- Trifluridine/Tipiracil: 70 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening.

**Literature:**

Mayer R.J. et al., N Engl J Med 372: 1909ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 198 Gastrointestinal Tumors

**3.6 Anal Cancer****3.6.1 MITOMYCIN / 5FU + RT** *XA149*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Mitomycin	12	–	–	Bolus	i.v.
1-5, 24- 28	5-Fluorouracil	750	0.9% NaCl	1000	24h	i.v.

Cycle Day of therapy	one cycle only, no repetition																														
	1	2	3	4	5																						24	25	26	27	28
Mitomycin																															
5-Fluorouracil																															

**Repetition:** None**Number of cycles:** Until progressive disease or intolerability**Note:**

- 5FU by continuous infusion during the first and final weeks of radiotherapy

**Literature:**

UKCCCR Anal Cancer Trial Working Party, Lancet 348: 1049ff, 1996

Bartelink H. et al., J Clin Oncol 15: 2040ff, 1997

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 3.7 Neuroendocrine Tumor/Cancer

### 3.7.1 INTERFERON ALPHA XA149

D	Drug	Do IU	Di	V ml	T	R
3x/ wk	Interferon-alpha	5 Mio.	–	–	–	s.c.

Cycle Day of therapy	continuous administration											
	1	3	5	8	10	12	15	17	19	22	24	26
Interferon-alpha	■	■	■	■	■	■	■	■	■	■	■	■

**Repetition:** Continuous administration**Note:**

- 500 mg Paracetamol 30 min before administration of Interferon alpha

**Literature:**

Öberg K. et al., Acta Oncol 30: 519ff, 1991

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 200 Gastrointestinal Tumors

**3.7.2 LANREOTIDE or OCTREOTIDE** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1	Lanreotide LAR	120	–	–	–	s.c.

**Alternatively**

D	Drug	Do mg	Di	V ml	T	R
1	Octreotide LAR	30	–	–	–	s.c.

Cycle	1				2
Day of therapy	1				29
Octreotide LAR					

**Repetition:** Day 29**Number of cycles:** Until progressive disease or intolerability**Note:**

- Alternatively: Octreotid 0.2 mg s.c. tid

**Literature:**

Caplin M.E. et al., N Engl J Med 371: 224ff, 2014

Öberg K. et al., Acta Oncol 15: 966ff, 2004



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.7.3 ETOPOSIDE / CISPLATIN XC304**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1, 2,3	Etoposide	130	0.9% NaCl	1000	24h	i.v.
2,3	Cisplatin	45	0.9% NaCl	1000	24h	i.v.

Cycle	1										2
Day of therapy	1	2	3								29
Etoposide											
Cisplatin											

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- Etoposide should be dissolved in 1000 ml 0.9% NaCl if total dose is  $\geq 200$  mg.
- Cisplatin (only if  $\geq$ GFR 60 ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Moertel C.G. et al., Cancer 68: 227ff, 1991

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 202 Gastrointestinal Tumors

**3.7.4 DOXORUBICIN XC444**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Doxorubicin	60	0.9% NaCl	250	1h	i.v.

Cycle	1										2
Day of therapy	1										22 (29)
Doxorubicin											

**Repetition:** Day 22 (29)**Number of cycles:** 6**Note:**

- Caution:* Cardiac toxicity of Doxorubicin at cumulative dose  $\geq 500$  mg/m<sup>2</sup>

**Literature:**

Engstrom P. et al., J Clin Oncol 2: 1255ff, 1984

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**3.7.5 SUNITINIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Sunitinib	37.5	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Sunitinib																												

**Repetition:** \* Continuous administration**Note:**

- *Caution:* Hypothyroidism
- Approval for pancreatic NETs only

**Literature:**

Raymond E. et al., N Engl J Med 364: 501ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 204 Gastrointestinal Tumors

**3.7.6 EVEROLIMUS** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Everolimus	10	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Everolimus																												

**Repetition:** \* Continuous administration**Note:**

- 10 mg at once (2 x 5 mg)

**Literature:**

Yao J.C. et al., N Engl J Med 364: 514ff, 2011

Yao J.C. et al., Lancet 387: 968ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

**3. Gastrointestinal**

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Neuroendocrine Tumor/Cancer 205

**3.7.7 CAPECITABINE / TEMOZOLOMIDE** *XA149*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-14	Capecitabine	1500	–	–	–	p.o.
10-14	Temozolomide	200	–	–	–	p.o.

Cycle Day of therapy	1														2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	29
Capecitabine															
Temozolomide															

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- Capecitabine: 1500 mg/m<sup>2</sup> divided into 2 equal doses, morning and evening within 30 min after a meal.

**Literature:**

Ramirez R.A. et al., The Oncologist 21: 671ff, 2016

## **Chapter 4**

# **Head and Neck Cancer**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

**4. ENT**

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 207 Oncology

**4.1 CISPLATIN / 5FU + PEMBROLIZUMAB**  
**XC284 + XA081**

D	Drug	Do	Di	V ml	T	R
1	Pembrolizumab	200 mg	0.9% NaCl	100	30'	i.v.
1	Cisplatin	100 mg/m <sup>2</sup>	0.9% NaCl	1000	1h	i.v.
1-4	5-Fluorouracil	1000 mg/m <sup>2</sup>	0.9% NaCl	1000	22h	i.v.

Cycle	1												2
Day of therapy	1	2	3	4									22
Pembrolizumab													
Cisplatin													
5-Fluorouracil													

**Repetition:** Day 22**Number of cycles:** Cisplatin/5FU: 6;  
Pembrolizumab: for up to 35**Note:**

- Pembrolizumab should be dissolved at 1-10 mg/ml
- Cisplatin (only if GFR  $\geq 60$  ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

- In case of Carboplatin (AUC 5) administration: XC196 (d1)

**Literature:** Burtneß B. et al., Lancet 394: 1915ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

**4. ENT**

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

**4.2 PEMBROLIZUMAB** XA081

D	Drug	Do mg	Di	V ml	T	R
1	Pembrolizumab	200	0.9% NaCl	100	30'	i.v.

Cycle	1										2
Day of therapy	1										22
Pembrolizumab											

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- Pembrolizumab should be dissolved at 1-10 mg/ml

**Literature:**

Burtneß B. et al., Lancet 394: 1915ff; 2019



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

**4. ENT**

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 209 Oncology

**4.3 CISPLATIN / 5FU + CETUXIMAB***XA284 + XA070 (Day 1), XA070 (Day 8,15)*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	Cetuximab	250*	0.9% NaCl	500	1h	i.v.
1	Cisplatin	100	0.9% NaCl	1000	1h	i.v.
1-4	5-Fluorouracil	1000	0.9% NaCl	1000	22h	i.v.

Cycle Day of therapy	1								2							
	1	2	3	4	8				15					22		
Cetuximab	■				■				■					■		
Cisplatin	■													■		
5-Fluorouracil	■	■	■	■										■	■	■

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Cisplatin (only if GFR  $\geq 60$  ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

- (\*) Cetuximab: initial administration over 120 min. If well tolerated, subsequent doses can be administered over 60 min. A one hour gap is mandatory between Cetuximab and other chemotherapeutic agents

**Literature:** Vermorken J.B. et al., N Engl J Med 359: 1116ff, 2008

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

**4. ENT**

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Head and Neck Cancer 210

**4.4 NIVOLUMAB** XA085

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	3	0.9% NaCl	100	1h	i.v.

Cycle	1										2									
Day of therapy	1																			15
Nivolumab																				

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- Nivolumab should be dissolved at 1-10 mg/ml
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)

**Literature:**

Ferris R.L. et al., N Engl J Med 375: 1856ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

**4. ENT**

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 211 Oncology

**4.5 DCF XC412**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Docetaxel	75	0.9% NaCl	250	1h	i.v.
1	Cisplatin	75	0.9% NaCl	1000	2h	i.v.
1-5	5-Fluorouracil	750	0.9% NaCl	1000	24h	i.v.

Cycle Day of therapy	1										2	
	1	2	3	4	5						22	
Docetaxel												
Cisplatin												
5-Fluorouracil												

**Repetition:** Day 22**Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Accompanying medication:*  
Dexamethasone 8 mg orally 2x daily for 3 days starting one day before Docetaxel administration
- Cisplatin (only if GFR ≥60 ml/min):  
*Accompanying medication:*  
*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min  
*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Vermorken J.B. et al., N Engl J Med 357: 1695ff, 2007

## **Chapter 5**

# **Soft Tissue Sarcoma**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 213 Oncology

**5.1 DOXORUBICIN / IFOSFAMIDE XC448**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-3	Doxorubicin	25	0.9% NaCl	250	1h	i.v.
1-4	Ifosfamide	2500	0.9% NaCl	500	23h	i.v.

Cycle Day of therapy	1												2			
	1	2	3	4									22			
Doxorubicin																
Ifosfamide																

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- **Caution:** Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500$  mg/m<sup>2</sup>
- **Mesna continuous infusion:** Dose (as an i.v. bolus) is equal to 20% of the Ifosfamide dose, followed by a continuous infusion of mesna at 40% of the Ifosfamide dose, continue mesna infusion 12-24 hours after completion of Ifosfamide infusion.

**Literature:**

Judson I. et al., Lancet Oncol 15: 415ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Soft Tissue Sarcoma 214

**5.2 IFOSFAMIDE** XA149

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-4	Ifosfamide	2000	0.9% NaCl	500	24h	i.v.

Cycle	1												2
Day of therapy	1	2	3	4									22
Ifosfamide													

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- *Mesna continuous infusion:* Dose (as an i.v. bolus) is equal to 20% of the Ifosfamide dose, followed by a continuous infusion of mesna at 40% of the Ifosfamide dose, continue mesna infusion 12-24 hours after completion of Ifosfamide infusion.
- Increased risk of CNS toxicity if albumin  $\leq 3.5$  g/dl

**Literature:**

Antman K.H. et al., J Clin Oncol 7: 126ff, 1989

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 215 Oncology

**5.3 ERIBULIN MESYLATE XC494**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8	Eribulin Mesylate*	1.4	0.9% NaCl	100	2-5'	i.v.

Cycle	1				2
Day of therapy	1	8			22
Eribulin Mesylate					

**Repetition:** Day 22**Note:**

- (\*) equivalent Eribulin dose of 1.23 mg/m<sup>2</sup> d1,8

**Literature:**

Schöffski P. et al., Lancet 387: 1629ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Soft Tissue Sarcoma 216

**5.4 EPIRUBICIN / IFOSFAMIDE XC476**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,2	Epirubicin	60	0.9% NaCl	500	1h	i.v.
1-5	Ifosfamide	1800	0.9% NaCl	500	1h	i.v.

Cycle Day of therapy	1																2			
	1	2	3	4	5												22			
Epirubicin																				
Ifosfamide																				

**Repetition:** Day 22**Number of cycles:** 5**Note:**

- *Caution:* Cardiac toxicity of Epirubicin at cumulative doses  $\geq 1000$  mg/m<sup>2</sup>
- *Mesna:* Dose is equal to 100% of the Ifosfamide dose, given as 20% of the Ifosfamide dose i.v. at hour 0, followed by 40% of the Ifosfamide dose given orally 2- and 6 hours after start of Ifosfamide
- Increased risk of CNS toxicity if albumin  $\leq 3.5$  g/dl

**Literature:**

Frustaci S et al., J Clin Oncol 19: 1238ff, 2001



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 217 Oncology

**5.5 CYVADIC (EORTC) XC376**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Cyclophosphamide	500	0.9% NaCl	250	1h	i.v.
1	Doxorubicin	50	0.9% NaCl	250	1h	i.v.
1,5	Vincristine	1*	0.9% NaCl	100	10'	i.v.
1-5	Dacarbazine	250	0.9% NaCl	500	1h	i.v.

Cycle Day of therapy	1					2				
	1	2	3	4	5				22	
Cyclophosphamide	■								■	
Doxorubicin	■									
Vincristine	■									
Dacarbazine	■	■	■	■	■				■	■

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- *Mesna*: Dose is equal to 100% of the Ifosfamide dose, given as 20% of the Ifosfamide dose i.v. at hour 0, followed by 40% of the Ifosfamide dose given orally 2- and 6 hours after start of Ifosfamide
- (\*) Vincristine max. 2 mg
- *Caution*: Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500$  mg/m<sup>2</sup>
- *Dacarbazine*: light-resistant infusion set mandatory

**Literature:** Gottlieb J.A. et al., Cancer Chemother Res 58: 265ff, 1974

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Soft Tissue Sarcoma 218

**5.6 MAID XC444**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-3	Doxorubicin	20	0.9% NaCl	500	24h	i.v.
1-3	Ifosfamide	2500	0.9% NaCl	1000	24h	i.v.
1-3	Dacarbazine	300	0.9% NaCl	500	24h	i.v.

Cycle Day of therapy	1										2
	1	2	3								22
Doxorubicin											
Ifosfomid											
Dacarbazine											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- *Mesna continuous infusion:* Dose (as an i.v. bolus) is equal to 20% of the Ifosfamide dose, followed by a continuous infusion of mesna at 40% of the Ifosfamide dose, continue mesna infusion 12-24 hours after completion of Ifosfamide infusion.
- Increased risk of CNS-toxicity if albumin  $\leq 3.5$  g/dl
- *Caution:* Cardiac toxicity of Doxorubicin at cumulative doses  $\geq 500$  mg/m<sup>2</sup>
- Dacarbazine: light-resistant infusion set mandatory

**Literature:**

Elias A. et al., J Clin Oncol 7: 1208ff, 1989

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 219 Oncology

**5.7 DOXORUBICIN / TRABECTEDIN XC954**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Doxorubicin	60	0.9% NaCl	250	1h	i.v.
1	Trabectedin	1.1	0.9% NaCl	1000	24h*	i.v.

Cycle	1												2
Day of therapy	1	2	3										22
Doxorubicin													
Trabectedin													

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- In the presence of a central venous device, Trabectedin can also be dissolved in 500 ml 0.9% NaCl and be administered over 3h

**Literature:**

Pautier P. et al., Lancet Oncol 16: 457ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Soft Tissue Sarcoma 220

**5.8 TRABECTEDIN XC952**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Trabectedin	1.5	0.9% NaCl	1000	24h	i.v.

Cycle	1										2
Day of therapy	1										22
Trabectedin											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- In the presence of a central venous device, Trabectedin can also be dissolved in 500 ml 0.9 % NaCl

**Literature:**

Demetri G.D. et al., J Clin Oncol 27: 4188ff, 2009

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 221 Oncology

**5.9 PAZOPANIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Pazopanib	800	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Pazopanib																												

**Repetition:** \* Continuous administration**Literature:**

Van der Graaf W.T., Lancet 379: 1879ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

**5. Soft Tissue**

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

Soft Tissue Sarcoma 222

**5.10 GEMCITABINE / DOCETAXEL XC416**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8	Gemcitabine	900	0.9 NaCl	500	30'	i.v.
8	Docetaxel	100	0.9 NaCl	250	1h	i.v.

Cycle	1							2						
Day of therapy	1						8						22	
Gemcitabine														
Docetaxel														

**Repetition:** Day 22**Note:**

- Docetaxel should be dissolved at 0.3-0.74 mg/ml
- *Accompanying medication:* Dexamethasone 8 mg orally 2x daily for 3 days starting one day before docetaxel administration

**Literature:**

Maki R.G. at al., J Clin Oncol 25: 2755ff, 2007

## **Chapter 6**

# **Gastrointestinal Stromal Tumors**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

**6. GIST**

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 224 Oncology

**6.1 IMATINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Imatinib	400	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Imatinib																												

**Repetition:** \* Continuous administration**Literature:**

Demetri G.D. et al., N Engl J Med 347: 472ff, 2002



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

**6. GIST**

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

GIST 225

**6.2 SUNITINIB**    *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-28	Sunitinib	50	–	–	–	p.o.

Cycle	1																												2	
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28		43
Sunitinib																														

**Repetition:**              Day 43**Note:**

- *Caution:* Hypothyroidism
- Sunitinib can also be administered continuously at a daily dose of 37.5 mg (George S. et al., J Clin Oncol 27: 3154ff, 2009)

**Literature:**

Demetri G.D. et al., Lancet 368: 1329ff, 2006

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

**6. GIST**

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

226 Oncology

**6.3 REGORAFENIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Regorafenib	160*	–	–	–	p.o.

Cycle Day of therapy	1																					2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Regorafenib																						

**Repetition:** Day 29**Note:**

- (\*) 160 mg (4 tablets of 40 mg) taken at once

**Literature:**

Demetri G.D. et al., Lancet 381: 295ff, 2013

## **Chapter 7**

### **Melanoma**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 228 Oncology

**7.1 TRAMETINIB / DABRAFENIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Trametinib	2	—	—	—	p.o.
1-*	Dabrafenib	300 <sup>#</sup>	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Trametinib																												
Dabrafenib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) Dabrafenib 150 mg twice daily
- In the adjuvant setting patients are treated for 12 months

**Literature:**

Long G.V. et al., Lancet 386: 444ff, 2015

Robert C. et al., N Engl J Med 372: 30ff, 2015

Long G.V. et al., N Engl J Med 377: 1813ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

**7. Melanoma**

8. Merkel

9. Thyroid

10. Urogenital Tract

Melanoma 229

**7.2 PEMBROLIZUMAB**    **XA081**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Pembrolizumab	2	0.9 NaCl	100	30'	i.v.

Cycle	1						2
Day of therapy	1						22
Pembrolizumab							

**Repetition:**            Day 22**Number of cycles:**    Until progressive disease or intolerability**Note:**

- Pembrolizumab should be dissolved at 1 - 10 mg/ml

**Literature:**

Ribas A. et al., Lancet Oncol 16: 908ff, 2015

Eggermont A.M.M. et al., N Engl J Med 378: 1789ff; 2018

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 230 Oncology

**7.3 NIVOLUMAB** XA085

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	3	0.9 NaCl	100	1h	i.v.

Cycle	1	2
Day of therapy	1	15
Nivolumab		

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- Nivolumab should be dissolved at 1 - 10 mg/ml
- In the adjuvant setting patients are treated for 12 months
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480 mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)

**Literature:**

Weber J.S. et al., Lancet Oncol. 16: 375ff, 2015

Robert C. et al. N Engl J Med 372: 320ff, 2015

Weber J. et al., N Engl J Med 377: 1824ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

**7. Melanoma**

8. Merkel

9. Thyroid

10. Urogenital Tract

Melanoma 231

**7.4 COBIMETINIB / VEMURAFENIB XA149**

D	Drug	Do mg	Di	V ml	T	R
1-21	Cobimetinib	60	–	–	–	p.o.
1-*	Vemurafenib	1920 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	1																					2						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21							29
Cobimetinib																												
Vemurafenib																												

**Repetition:** Day 29, \* continuous administration**Note:**

- (<sup>#</sup>) Vemurafenib 960 mg twice daily

**Literature:**

Larkin J. et al., N Engl J Med 371: 1867ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

**7. Melanoma**

8. Merkel

9. Thyroid

10. Urogenital Tract

## 232 Oncology

**7.5 ENCORAFENIB / BINIMETINIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Encorafenib	450	—	—	—	p.o.
1-*	Binimetinib	90*	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Encorafenib																												
Binimetinib																												

**Repetition:** \* Continuous administration**Note:**

- (\*) Binimetinib: 90 mg divided into 2 equal doses, morning and evening.

**Literature:**

Dummer R. et al., Lancet Oncol 19: 603ff, 2018



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

**7. Melanoma**

8. Merkel

9. Thyroid

10. Urogenital Tract

Melanoma 233

**7.6 IPILIMUMAB / NIVOLUMAB XA084 + XA085**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	1	0.9 NaCl	100	1h	i.v.
1	Ipilimumab	3	0.9 NaCl	100	90'	i.v.

Cycle	1														2
Day of therapy	1														22
Nivolumab															
Ipilimumab															

**Repetition:** Day 22**Number of cycles:** 1-4

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab	3	0.9 NaCl	100	1h	i.v.

Cycle	1														2
Day of therapy	1														15
Nivolumab															

**Repetition:** Day 15**Number of cycles:** From cycle 5 onwards until progressive disease or intolerability

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 234 Oncology

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**Note:**

- Nivolumab should be dissolved at 1 - 10 mg/ml
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480 mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)
- Ipilimumab should be dissolved at 1 - 4 mg/ml

**Literature:**

Larkin J. et al., N Engl J Med 373: 23ff, 2015

Postow M.A. et al., N Engl J Med 372: 2006ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

**7. Melanoma**

8. Merkel

9. Thyroid

10. Urogenital Tract

Melanoma 235

**7.7 DACARBAZINE** XA149

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Dacarbazine	1000	0.9% NaCl	500	2h	i.v.

Cycle	1										2
Day of therapy	1										22
Dacarbazine											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- *Caution:* light-resistant infusion set mandatory

**Literature:**

Chapman P.B. et al., J Clin Oncol 17: 2745ff, 1999

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## 236 Oncology

**7.8 TEMOZOLOMIDE XC820**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-5	Temozolomide	200	–	–	–	p.o.

Cycle Day of therapy	1														2
	1	2	3	4	5										29
Temozolomide															

**Repetition:** Day 29**Number of cycles:** 6**Literature:**

Middleton M.R. et al., J Clin Oncol 18: 158ff, 2000

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

**7. Melanoma**

8. Merkel

9. Thyroid

10. Urogenital Tract

Melanoma 237

**7.9 FOTEMUSTIN XC564**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	Fotemustin	100	5% Glucose	500	1h	i.v.

Phase Cycle Day of therapy	Induction				Consolidation			
	1				2		3	
	1	8	15		29-43			50-64
Fotemustin								

**Repetition:** Day 29-43**Number of cycles:** Until progressive disease or intolerability**Note:**

- Subsequent to the induction phase (Day 1,8,15) the consolidation phase is to be initiated (Start: Day 29-43), Fotemustin 100 mg/m<sup>2</sup> is to be administered only once every three weeks.
- Fotemustin should not be stored for more than 4 hours at room temperature  
(*Caution:* Strict protection from light is required).

**Literature:**

Jacquillat C. et al., Cancer 66: 1873ff, 1990

## **Chapter 8**

# **Merkel Cell Carcinoma**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

**8. Merkel**

9. Thyroid

10. Urogenital Tract

## 239 Oncology

**8.1 AVELUMAB** XA056

D	Drug	Do mg/kg	Di	V ml	T	R
1	Avelumab	10	0.9% NaCl	250	1h	i.v.

Cycle	1										2									
Day of therapy	1											15								
Avelumab																				

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Literature:**

Kaufmann H.L. et al., Lancet Oncol 17: 1374ff, 2016

## **Chapter 9**

# **Thyroid Cancer**



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

**9. Thyroid**

10. Urogenital Tract

## 241 Oncology

**9.1 VANDETANIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Vandetanib	300	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Vandetanib																												

**Repetition:** \* Continuous administration**Literature:**

Wells S.A. et al., J Clin Oncol 30: 134ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

**9. Thyroid**

10. Urogenital Tract

**9.2 SORAFENIB**

D	Drug	Do mg	Di	V ml	T	R
1-*	Sorafenib	800 <sup>#</sup>	–	–	–	p.o.

Cycle	continuous administration																											
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Sorafenib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) 800 mg divided into two equal doses, morning and evening

**Literature:**

Brose M.S. et al., Lancet 384: 319ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

**9. Thyroid**

10. Urogenital Tract

## 243 Oncology

**9.3 CABOZANTINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Cabozantinib	140 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Cabozantinib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) 140 mg (one 80 mg capsule and 3 x 20 capsule) taken at once

**Literature:**

Elisei R. et al., J Clin Oncol 31: 3639ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

**9. Thyroid**

10. Urogenital Tract

**9.4 LENVATINIB XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Lenvatinib	24 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Lenvatinib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) 24 mg (two 10 mg capsules and one 4 mg capsule) taken once daily

**Literature:**

Schlumberger M. et al., N Engl J Med 372: 621ff, 2015

## **Chapter 10**

# **Tumors of the Urogenital Tract**

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 246 Tumors of the Urogenital Tract

**10.1 Renal Cell Carcinoma****10.1.1 AVELUMAB + AXITINIB** XA056

D	Drug	Do	Di	V ml	T	R
1	Avelumab	10 mg/kg	0.9% NaCl	250	1h	i.v.
1-*	Axitinib	10 mg <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	1														2													
	1														15													
Avelumab																												
Axitinib																												

**Repetition:** Avelumab d15,  
\* continuous administration

**Number of cycles:** Until progressive disease or intolerability

**Note:**

- (#) Axitinib 10mg divided into 2 equal doses, morning and evening.

**Literature:**

Motzer R.J. et al., N Engl J Med 380: 1103ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Renal Cell Carcinoma 247

**10.1.2 PEMBROLIZUMAB + AXITINIB XA081**

D	Drug	Do	Di	V ml	T	R
1	Pembrolizumab	200 mg	0.9% NaCl	100	30'	i.v.
1-*	Axitinib	10 mg <sup>#</sup>	–	–	–	p.o.

Cycle	1			2
Day of therapy	1			22
Pembrolizumab				
Axitinib				

**Repetition:** Pembrolizumab d22,  
\* continuous administration

**Number of cycles:** Until progressive disease or intolerability

**Note:**

- Pembrolizumab should be dissolved at 1-10 mg/ml
- <sup>(#)</sup> Axitinib 10 mg divided into 2 equal doses, morning and evening

**Literature:**

Rini B.I. et al., N Engl J Med 380: 1116ff, 2019

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 248 Tumors of the Urogenital Tract

**10.1.3 SUNITINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-28	Sunitinib	50	–	–	–	p.o.

Cycle	1																												2
Day of therapy	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	43
Sunitinib																													

**Repetition:** Day 43**Number of cycles:** Until progressive disease or intolerability**Note:**

- *Caution:* Hypothyroidism
- Sunitinib can also be administered continuously at a daily dose of 37.5 mg (Escudier B. et al., J Clin Oncol 27: 4068ff, 2009).

**Literature:**

Motzer R.J. et al., N Engl J Med 356: 115ff, 2007

Motzer R.J. et al., J Clin Oncol 27: 3584ff, 2009



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Renal Cell Carcionoma 249

**10.1.4 SORAFENIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Sorafenib	800	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Sorafenib																												

**Repetition:** \* Continuous administration**Note:**

- 800 mg divided into 2 equal doses, morning and evening

**Literature:**

Escudier B. et al., N Engl J Med 356: 125ff, 2007

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 250 Tumors of the Urogenital Tract

**10.1.5 CABOZANTINIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Cabozantinib	60 <sup>#</sup>	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Cabozantinib																												

**Repetition:** \* Continuous administration**Note:**

- (<sup>#</sup>) 60 mg (three 20 mg capsules) taken at once

**Literature:**

Choueiri T.K. et al., N Engl J Med 373: 1814ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Renal Cell Carcinoma 251

**10.1.6 NIVOLUMAB XA085**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	3	0.9% NaCl	100	1h	i.v.

Cycle	1										2									
Day of therapy	1											15								
Nivolumab																				

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- Nivolumab should be dissolved at 1 - 10 mg/ml
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480 mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)

**Literature:**

Motzer R.J. et al., N Engl J Med 373: 1803ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 252 Tumors of the Urogenital Tract

**10.1.7 TIVOZANIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-21	Tivozanib	1.5	–	–	–	p.o.

Cycle Day of therapy	1																					2
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	29
Tivozanib																						

**Repetition:** Day 29**Literature:**

Motzer R.J. et al., J Clin Oncol 31: 3791ff, 2013

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Renal Cell Carcinoma 253

**10.1.8 EVEROLIMUS / LENVATINIB XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Everolimus	5	–	–	–	p.o.
1-*	Lenvatinib mesylate	18	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Everolimus																												
Lenvatinib mesylate																												

**Repetition:** \* Continuous administration**Literature:**

Motzer R.J. et al., Lancet Oncol 16: 1473ff, 2015

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 254 Tumors of the Urogenital Tract

**10.1.9 TEMSIROLIMUS** XA030

D	Drug	Do mg	Di	V ml	T	R
1	Temsirolimus	25	0.9% NaCl	250	1h	i.v.

Cycle	1	2	3	4
Day of therapy	1	8	15	22
Temsirolimus	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>

**Repetition:** Day 8**Note:**

- *Accompanying medication:*  
Premedication with 30 mg Diphenhydramine is optional
- Administration has to be performed via a light-protected PVC-free infusion device and Inline-filter.

**Literature:**

Hudes G. et al., N Engl J Med 356: 2271ff, 2007

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Renal Cell Carcinoma 255

**10.1.10 INTERFERON ALPHA + BEVACIZUMAB***XA149 + XA060*

D	Drug	Do	Di	V ml	T	R
1,3, 5,8, 10, 12	Interferon alpha 2a	3 MIU (absolute)	–	–	–	s.c.
1	Bevacizumab	10 mg/kg	0.9% NaCl	100	90'*	i.v.

Cycle	1						2					
Day of therapy	1	3	5	8	10	12	15					
Interferon alpha 2a	■	■	■	■	■	■	■	■	■	■	■	■
Bevacizumab	■						■					

**Repetition:** Day 15**Number of cycles:** Interferon alpha: max. 52 weeks or until disease progression; Bevacizumab: until disease progression**Note:**

- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- According to a retrospective analysis, the IFN dose had to be adjusted to 6 MIU (61% of patients) and to 3 MIU (31% of patients) without any loss of efficacy.

**Literature:**

Escudier B. et al., Lancet 370: 2103ff, 2007

Melichar B. et al., Ann Oncol 19: 1470ff, 2008

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 256 Tumors of the Urogenital Tract

**10.1.11 EVEROLIMUS XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Everolimus	10	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Everolimus																												

**Repetition:** \* Continuous administration**Note:**

- 10 mg at once (2 x 5 mg)

**Literature:**

Motzer R.J. et al., Lancet 372: 449ff, 2008



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Renal Cell Carcionoma 257

**10.1.12 PAZOPANIB XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Pazopanib	800	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Pazopanib																												

**Repetition:** \* Continuous administration**Literature:**

Sternberg C.N. et al., J Clin Oncol 28: 1061ff, 2010

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 258 Tumors of the Urogenital Tract

**10.1.13 AXITINIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Axitinib	10 <sup>#</sup>	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Axitinib																												

**Repetition:** \* Continuous administration**Note:**

- (#) 10 mg divided into two equal doses, morning and evening

**Literature:**

Rini B. et al., Lancet 378: 1931ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Urothelial Carcinoma 259

**10.2 Urothelial Carcinoma****10.2.1 GEMCITABINE / CISPLATIN XC592**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1,8, 15	Gemcitabine	1000	0.9% NaCl	500	30'	i.v.
2	Cisplatin	70	0.9% NaCl	500	1h	i.v.

Cycle	1												2
Day of therapy	1	2		8		15							29
Gemcitabine	■			■		■							■
Cisplatin	■												■

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- Cisplatin (only if GFR  $\geq 60$  ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  
MgSO<sub>4</sub> i.v. over 60 min.

200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

von der Maase H., J Clin Oncol 18: 3068ff, 2000

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 260 Tumors of the Urogenital Tract

**10.2.2 VINFLUNINE XC882**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Vinflunine	320	0.9% NaCl	100	20'	i.v.

Cycle	1					2
Day of therapy	1					22
Vinflunine						

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- *Caution:* Strict protection from light is required
- *Caution:* Thrombophlebitis; in case of peripheral access, Vinflunine should be followed by 250 ml 0.9% NaCl i.v.

**Literature:**

Krzakowski M. et al., J Clin Oncol 28: 2167ff, 2010

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Urothelial Carcinoma 261

**10.2.3 NIVOLUMAB XA085**

D	Drug	Do mg/kg	Di	V ml	T	R
1	Nivolumab*	3	0.9% NaCl	100	1h	i.v.

Cycle	1	2
Day of therapy	1	15
Nivolumab	<div><div></div></div>	<div><div></div></div>

**Repetition:** Day 15**Number of cycles:** Until progressive disease or intolerability**Note:**

- Nivolumab should be dissolved at 1-10 mg/ml
- (\*) Nivolumab can also be administered at 240 mg flat-dose every 2 weeks (Zhao X. et al., Ann Oncol 28: 2002ff, 2017) or at 480 mg every 4 weeks (Long G.V. et al.; Ann Oncol 29: 2208ff, 2018)

**Literature:**

Sharma P. et al., Lancet Oncol 17: 1590ff, 2016

Sharma P. et al., Lancet Oncol 18: 312ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 262 Tumors of the Urogenital Tract

**10.2.4 PEMBROLIZUMAB** XA081

D	Drug	Do mg	Di	V ml	T	R
1	Pembrolizumab	200	0.9% NaCl	100	30'	i.v.

Cycle	1					2
Day of therapy	1					22
Pembrolizumab						

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- Pembrolizumab should be dissolved at 1-10 mg/ml

**Literature:**

Bellmunt J. et al., N Engl J Med 376: 1015ff, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Urothelial Carcinoma 263

**10.2.5 ATEZOLIZUMAB XA054**

D	Drug	Do mg	Di	V ml	T	R
1	Atezolizumab	1200	0.9% NaCl	500	30'*	i.v.

Cycle	1										2
Day of therapy	1										22
Atezolizumab											

**Repetition:** Day 22**Number of cycles:** Until progressive disease or intolerability**Note:**

- (\*) Atezolizumab: The initial dose should be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min
- Atezolizumab should be dissolved at 4.4 mg/ml

**Literature:**

Rosenberg J.E. et al., Lancet 387: 1909ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 264 Tumors of the Urogenital Tract

**10.3 Ovarian Cancer****10.3.1 CARBOPLATIN / PACLITAXEL +  
BEVACIZUMAB XC772 + XA060**

D	Drug	Do	Di	V ml	T	R
1	Carboplatin	AUC 6	5% Glucose	500	30'	i.v.
1	Paclitaxel	175 mg/m <sup>2</sup>	0.9% NaCl	500	3h	i.v.
1	Bevacizumab	15 mg/kg	0.9% NaCl	100	90'*	i.v.

Cycle	1										2
Day of therapy	1										22
Carboplatin											
Paclitaxel											
Bevacizumab											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Paclitaxel should be dissolved at 0.3 - 1.2 mg/ml  
*Paclitaxel-accompanying medication:*  
Dexamethasone 20 mg i.v. 30 min before Paclitaxel,  
or Dexamethasone 20 mg orally 6 h and 12 h before  
Paclitaxel. Additional premedication with 50 mg Ranitidine  
and 30 mg Diphenhydramine is recommended.
- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)





## HEMATOLOGY

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

## ONCOLOGY

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

10. Urogenital Tract

## Ovarian Cancer 265

- Bevacizumab: start at cycle 2 through 22
- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- Diluted Paclitaxel solutions should be administered through non PVC-containing administration sets.

### Literature:

Burger et al., N Engl J Med 365: 2473ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 266 Tumors of the Urogenital Tract

**10.3.2 CARBOPLATIN / DOCETAXEL XC184**

D	Drug	Do	Di	V ml	T	R
1	Carboplatin	AUC 5	5% Glucose	500	30'	i.v.
1	Docetaxel	75 mg/m <sup>2</sup>	0.9% NaCl	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Carboplatin											
Docetaxel											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Accompanying medication:*  
Dexamethasone 8 mg orally 2x daily for 3 days starting on day 1 before Docetaxel administration
- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)

**Literature:**

Vasey P.A. et al., J. Natl Cancer Inst 96: 1682ff, 2004

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract****10.3.3 CARBOPLATIN / CYCLOPHOSPHAMIDE**  
*XC180*

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Carboplatin	300	5% Glucose	500	1h	i.v.
1	Cyclophosphamide	600	0.9% NaCl	500	1h	i.v.

Cycle	1					2
Day of therapy	1					29
Carboplatin						
Cyclophosphamide						

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- *Mesna*: Dose is equal to 100% of the Cyclophosphamide dose, given as 20% of the Cyclophosphamide dose i.v. at hour 0, followed by 40% of the Cyclophosphamide dose given orally 2- and 6 hours after start of Cyclophosphamide

**Literature:**

Swenerton K. et al., J Clin Oncol 10: 718ff, 1992

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 268 Tumors of the Urogenital Tract

**10.3.4 PEGYLATED LIPOSOMAL DOXORUBICIN**  
**XC452**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Pegylated liposomal Doxorubicin (Caelyx®)	50	5% Glucose	500	1h	i.v.

Cycle	1				2
Day of therapy	1				29
Pegyl. lip. Doxorub.					

**Repetition:** Day 29**Number of cycles:** 6**Note:**

- Pegylated liposomal Doxorubicin should be dissolved in 250 ml of 5% Glucose if total dose is  $\leq 90$  mg and in 500 ml of 5% Glucose in case the total dose exceeds 90 mg.

**Literature:**

Gordon A., J Clin Oncol 19: 3312ff, 2001

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract****10.3.5 TRABECTEDIN / PEGYLATED LIPOSOMAL DOXORUBICIN XC454**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1	Pegylated liposomal Doxorubicin (Caelyx®)	30	5% Glucose	500	1h	i.v.
1	Trabectedin	1.1	0.9% NaCl	1000	3h	i.v.

Cycle	1										2
Day of therapy	1										22
Pegyl. lip. Doxorub.											
Trabectedin											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Pegylated liposomal Doxorubicin should be dissolved in 250 ml of 5% Glucose if total dose is  $\leq 90$  mg and in 500 ml of 5% Glucose in case the total dose exceeds 90 mg.
- In the presence of a central venous device, Trabectedin can also be dissolved in 500ml 0.9% NaCl and be administered over 3h

**Literature:**

Kaye S.B. et al., Ann Oncol 22: 49ff, 2011

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 270 Tumors of the Urogenital Tract

**10.3.6 TOPOTECAN / BEVACIZUMAB***XC836 + XA060*

D	Drug	Do	Di	V ml	T	R
1,8, 15	Topotecan	4 mg/m <sup>2</sup>	0.9 NaCl	50	30'	i.v.
1,15	Bevacizumab	10 mg/kg	0.9 NaCl	100	90'*	i.v.

Cycle Day of therapy	1							2						
	1		8		15					29				
Topotecan														
Bevacizumab														

**Repetition:** Day 29**Number of cycles:** Until progressive disease or intolerability**Note:**

- Topotecan should be dissolved at 0.025-0.05 mg/ml
- (\*) Bevacizumab: the initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.
- Instead of Topotecan, one can either use Paclitaxel 80 mg/m<sup>2</sup> d1,8,15,22 (q29) or pegylated liposomal Doxorubicin 40 mg/m<sup>2</sup> d1 (q29).

**Literature:**

Pujade-Lauraine E. et al., J Clin Oncol 32: 1302ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Ovarian Cancer 271

**10.3.7 CARBOPLATIN XC172**

D	Drug	Do	Di	V ml	T	R
1	Carboplatin	AUC 5	5% Glucose	500	1h	i.v.

Cycle	1										2
Day of therapy	1										22
Carboplatin											

**Repetition:** Day 22**Number of cycles:** 6**Note:**

- Calculation of Carboplatin dose (Calvert):  
Dose (mg) = target AUC x (GFR + 25)

**Literature:**

The International Collaborative Ovarian Neoplasm (ICON)  
Group, Lancet 360: 505ff, 2002

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 272 Tumors of the Urogenital Tract

**10.3.8 OLAPARIB** XA149

D	Drug	Do mg	Di	V ml	T	R
1-*	Olaparib	800	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Olaparib																												

**Repetition:** \* Continuous administration**Note:**

- The recommended dose is 400 mg (eight capsules) taken twice daily

**Literature:**

Friedlander M. et al., Br J Cancer 119: 1075ff, 2018

Moore K.N. et al., N Engl J Med 379: 2495ff, 2018



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Ovarian Cancer 273

**10.3.9 NIRAPARIB** *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Niraparib	300	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Niraparib																												

**Repetition:** \* Continuous administration**Literature:**

Mirza M.R. et al., N Engl J Med 375: 2154ff, 2016

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 274 Tumors of the Urogenital Tract

**10.4 Cervical Cancer****10.4.1 PACLITAXEL / CISPLATIN /  
BEVACIZUMAB   XA060 + XC772**

D	Drug	Do	Di	V ml	T	R
1	Paclitaxel	135 mg/m <sup>2</sup>	0.9 NaCl	500	3h	i.v.
1	Cisplatin <sup>#</sup>	50 mg/m <sup>2</sup>	0.9 NaCl	500	1h	i.v.
1	Bevacizumab	15 mg/kg	0.9 NaCl	100	90 <sup>1*</sup>	i.v.

Cycle	1												2
Day of therapy	1												22
Paclitaxel													
Topotecan													
Bevacizumab													

**Repetition:** Day 22**Number of cycles:** 6*optional:* Bevacizumab can be continued until progressive disease or intolerability**Note:**

- Paclitaxel should be dissolved at 0,3-1,2 mg/ml
- *Paclitaxel-accompanying medication:*  
Dexamethasone 20 mg i.v. 30 min before Paclitaxel, or Dexamethasone 20 mg orally 6 h and 12 h before Paclitaxel. Additional premedication with 40 mg Famotidine and 30 mg Diphenhydramine is recommended.

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

- (#) Cisplatin (only if GFR  $\geq 60$  ml/ min):  
*Accompanying medication:*  
*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq  $\text{MgSO}_4$  i.v. over 60 min.  
 200 ml Mannite 20% over 30 min  
*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl
- (\*) Bevacizumab: The initial dose should be administered over 90 min. If the first infusion is well tolerated, the second infusion may be administered over 60 min. If the 60-minute infusion is well tolerated, all subsequent infusions may be administered over 30 min.

**Literature:**

Tewari K.S. et al., N Engl J Med 370: 734ff, 2014

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 276 Tumors of the Urogenital Tract

**10.5 Prostate Cancer****10.5.1 DOCETAXEL / PREDNISOLONE XC412**

D	Drug	Do	Di	V ml	T	R
1	Docetaxel	75 mg/m <sup>2</sup>	0.9% NaCl	250	1h	i.v.
1-*	Prednisolone	10 mg	–	–	–	p.o.

Cycle	1				2
Day of therapy	1				22
Docetaxel					
Prednisolone					

**Repetition:** Day 22  
\* Continuous administratio

**Number of cycles:** 6

**Note:**

- Docetaxel should be dissolved at 0.3 - 0.74 mg/ml
- *Accompanying medication:*  
Dexamethasone 4 mg orally 12h, 6h, 1h before and 12h, 24h, 36h after Docetaxel administration. If there are no hypersensitivity reactions, Dexamethasone dose can be reduced to 2x 4 mg orally on the Day of Docetaxel administration.

**Literature:**

Tannock I.F. et al., N Engl J Med 351: 1501ff, 2004

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Prostate Cancer 277

**10.5.2 CABAZITAXEL / PREDNISOLONE XC166**

D	Drug	Do	Di	V ml	T	R
1	Cabazitaxel	25 mg/m <sup>2</sup>	0.9% NaCl	500	1h	i.v.
1-*	Prednisolone	10 mg	–	–	–	p.o.

Cycle	1										2
Day of therapy	1										22
Cabazitaxel											
Prednisolone											

**Repetition:** Day 22, \* Continuous administration**Number of cycles:** 6**Note:**

- Cabazitaxel should be dissolved at 0.1 - 0.26 mg/ml
- *Accompanying medication:*  
Dexamethasone 8 mg, Ranitidine 50 mg and Diphenhydramine 30 mg prior to Cabazitaxel is recommended.
- Diluted Cabazitaxel solutions should be administered through non PVC-containing administration sets.

**Literature:**

De Bono J.S. et al., Lancet 376: 1147ff, 2010

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 278 Tumors of the Urogenital Tract

**10.5.3 ABIRATERONE ACETATE /  
PREDNISOLONE XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Abiraterone acetate	1000	–	–	–	p.o.
1-*	Prednisolone	10	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Abiraterone acetate																												
Prednisolone																												

**Repetition:** \* Continuous administration**Note:**

- Abiraterone acetate: 1000 mg at once (4 x 250 mg)
- In the 1st-line setting in combination with androgen deprivation therapy

**Literature:**

De Bono J.S. et al., N Engl J Med 364: 1995ff, 2011

Ryan C.J., N Engl J Med 368: 138, 2013

James N.D. et al., N Engl J Med 377: 338, 2017

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Prostate Cancer 279

**10.5.4 ENZALUTAMIDE XA149**

D	Drug	Do mg	Di	V ml	T	R
1-*	Enzalutamide	160	—	—	—	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Enzalutamide																												

**Repetition:** \* Continuous administration**Note:**

- Enzalutamide (four 40 mg capsules) administered orally once daily

**Literature:**

Scher H. et al., N Engl J Med 367: 1187ff, 2012

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 280 Tumors of the Urogenital Tract

**10.5.5 APALUTAMIDE**    *XA149*

D	Drug	Do mg	Di	V ml	T	R
1-*	Apalutamide	240	–	–	–	p.o.

Cycle Day of therapy	continuous administration																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Apalutamide																												

**Repetition:**                      \* Continuous administration**Literature:**

Chi K.N. et al., N Engl J Med 381: 13ff, 2019



**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

Table of Contents

**10.6 Testicular Cancer****10.6.1 PEB (Day 1-5: XC788; Day 8,15: XA149)**

D	Drug	Do	Di	V ml	T	R
1-5	Cisplatin	20 mg/m <sup>2</sup>	0.9% NaCl	500	30'	i.v.
1-5	Etoposide	100 mg/m <sup>2</sup>	0.9% NaCl	500	1h	i.v.
2,9, 16	Bleomycin	30 mg (absolute)	—	—	Bolus	i.v.

Cycle Day of therapy	1																2			
	1	2	3	4	5	9	16	22												
Cisplatin																				
Etoposide																				
Bleomycin																				

**Repetition:** Day 22**Number of cycles:** 3-4**Note:**

- Etoposide should be dissolved in 1000 ml 0.9% NaCl if total dose is  $\geq 200$  mg.
- Cisplatin (only if GFR  $\geq 60$  ml/ min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Williams S.D. et al., N Engl J Med 316: 1435ff, 1987

**HEMATOLOGY**

1. High Grade NHL

2. Low Grade NHL

3. Hodgkin's

4. Multiple Myeloma

5. MDS

6. CML

7. CMPD

**ONCOLOGY**

1. Lung Cancer

2. Breast Cancer

3. Gastrointestinal

4. ENT

5. Soft Tissue

6. GIST

7. Melanoma

8. Merkel

9. Thyroid

**10. Urogenital Tract**

## 282 Tumors of the Urogenital Tract

**10.6.2 PEI XC796**

D	Drug	Do mg/m <sup>2</sup>	Di	V ml	T	R
1-5	Cisplatin	20	0.9% NaCl	500	30'	i.v.
1-5	Etoposide	75	0.9% NaCl	1000	1h	i.v.
1-5	Ifosfamide	1200	0.9% NaCl	500	1h	i.v.

Cycle Day of therapy	1										2	
	1	2	3	4	5						22	
Cisplatin												
Etoposide												
Ifosfamide												

**Repetition:** Day 22**Note:**

- *Mesna*: Dose is equal to 100% of the Ifosfamide dose, given as 20% of the Ifosfamide dose i.v. at hour 0, followed by 40% of the Ifosfamide dose given orally 2- and 6 hours after start of Ifosfamide
- Increased risk of CNS toxicity if albumin  $\leq 3.5$  g/dl
- Cisplatin (only if GFR  $\geq 60$  ml/min):

*Accompanying medication:*

*Premedication:* 500 ml 0.9% NaCl + 10 mEq KCl + 8 mEq MgSO<sub>4</sub> i.v. over 60 min.  
200 ml Mannite 20% over 30 min

*Postmedication:* 500 ml 0.9% NaCl i.v. + 10 mEq KCl

**Literature:**

Harstrick A. et al., J Clin Oncol 9: 1549ff, 1991